

FIG. 1

AlaSerCysLeuAsnCysSerAlaSerIleIleProAspArgGluValLeuTyrArgGlu
1 GGCCTCCTGCTTGAAC TGCTCGCGAGCATCATACCTGACAGGGAAAGTCCTTACCGAGA
CCGGAGGACGA CTTGACGAGCCGCTCGTAGTATGGACTGTCCCTCAGGAGATGGCTCT

PheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeu
61 GTTCGATGAGATGGAAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCT
CAAGCTACTCTACCTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGA

AlaGluGlnPheLysGlnLysAlaLeuGlyLeu
121 CGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCC
CGGGCTCGTCAAGTCGTCTCCGGGAGCCGGAGG

FIG. 3

GlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAsp
1 CTGGCTCGTGGTCATAGTGGCAGGGTCGTCTGTCCGGAAAGCCGGCAATCATACCTG
GACCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTCGGCCGTTAGTATGGAC

T
ArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyr
61 ACAGGGAAAGTCCTCTACCGAGAGTTGATGAGATGGAAAGAGTGCTCTCAGCACTTACCGT
TGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTCTCACGAGAGTCGTGAATGGCA
A

IleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeuGln
121 ACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAACAGGCCCTCGGCCCTGC
TGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTCGTCTCCGGAGCCGGAGGACG

ThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLysLeu
181 AGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCCTGCTGCTCAGACCAAATGGCAAAAC
TCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTTTTG

GluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAlaGly
241 TCGAGACCTCTGGCGAAGCATATGTGAACTTCATCAGTGGATAACAATACTTGGCGG
AGCTCTGGAAGACCCGCTCGTATACACCTTGAAAGTAGTCACCCATGTTATGAACCGCC

LeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaVal
301 GCTGTCAACGCTGCTGGTAACCCGCCATTGCTTCATTGATGGCTTTACAGCTGCTG
CGAACAGTTGCGACGGACCATTGGGGCGTAACGAAGTAACCGAAAATGTCGACGAC

ThrSerProLeuThrThrSerGln
361 TCACCAAGCCCCTAAACCACTAGCCAAA
AGTGGTCGGGTGATTGGTATCGGTT

FIG. 2

5-1-1	1	ggccctcgctgaacttgccgagc]ATCATACCTGACAGGGAAAG
81	1	GTCCGGGAAGCCGCAATCATACCTGACAGGGAAAG
91	1	ctggctgcgtGGTCAAGTGGCAAGGGTCTTGTCGGCAATCATACCTGACAGGGAAAG
1-2	1	GGTCATAGTGGCAGGGTCTGCTTGTCCGGAAAGCCGCAATCATACCTGACAGGGAAAG
5-1-1	48	TCCCTTACCGAGAGTTGATGAGATTGGAAAGAGTGCTCTCAGGCACCTTACCTGAGCAAAGGGATGATG
81	36	TCCCTTACCGAGAGTTGATGAGATTGGAAAGAGTGCTCTCAGGCACCTTACCTGAGCAAAGGGATGATG
91	70	TCCCTTACCGAGAGTTGATGAGATTGGAAAGAGTGCTCTCAGGCACCTTACCTGAGCAAAGGGATGATG
1-2	60	TCCCTTATCGAGAGTTGATGAGATTGGAAAGAGTGCTCTCAGGCACCTTACCTGAGCAAAGGGATGATG
5-1-1	120	TGCCCGAGCAAGTCAAGCAGAAGGCCCTGGCTCC
81	108	TGCCCGAGCAAGTCAAGCAGAAGGCCCTGGCTCTGGCTCTGGCAAGACCGCTCCGTCAAGGAGAGTTATCGCCC
91	142	TGCCCGAGCAAGTCAAGCAGAAGGCCCTGGCTCTGGCTCTGGCAAGACCGCTCCGTCAAGGAGAGTTATCGCCC
1-2	132	TGCCCGAGCAAGTCAAGCAGAAGGCCCTGGCC
81	180	CTGCTGTCAGACCAACTGGCAAAAACCTCGAGACCTTCTGGCAAGACATATGGAAACTTATCAGTGGGA
91	214	CTGCTGTCAGACCAACTGGCAAAAACCTCGAGACCTTCTGGCAAGACATATGGAAACTTATCAGTGGGA
81	252	TACAATACTTGGGGCTTGTCAACGCTGCCTGGtaacccgcattgtatggctttacagctg
91	286	TACAATACTTGGGGCTTGTCAACGCTGCCTGG
81	324	ctgttaccaggccacataaccacatggccaaa

FIG. 4

SerGlyLysProAlaIleIleProAspArgGluValLeuTyrrArgGluPheAspGluMet
1 GTCCGGAAAGCCGGCAATCATACCTGACAGGGAAAGTCCTACCGAGACTTCGATGAGAT
CAGGCCCTTCGGCGTTAGTAGTGGACTGTGGAGATGGCTCTCAAGGCTACTTA

GluGluCysSerGlnHisLeuProTyrlleGluGlnGlyMetMetLeuAlaGluGlnPhe
61 GGAAGAGTGCTCTCAGGCAACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTT
CCTTCTCACGAGAGTCGTGAATGGCATGCTAGCTAGCTCGTCCCTACTACCGAGCGGGCTCGTCAA

LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
121 CAAGCAGAAGGCCCTCGGCCAACCGCGTCCCGTCAGGCAGGGTATCGCCCC
GTTCCGTCTCGGGAGCCGGAGGGACGGTCTGGCAGGGCAGTCCGTCTCCAATAAGCGGG

AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysMetTrpAsnPhe
181 TGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGCGAAGCCATATGTGGAACCT
ACGACAGGGTCTGGTACCGGTTTGAGCTCTGGAAAGACCCGCTTCGTATAACACCTTGAA

IleSerGlyIleGlnTyrlleAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
241 CATCAGTGGGATAACAATACT"TGCGGGCTTGCTCAACGGCTGGTAACCCGCCATTGC
GTAGTCACCCATATGTAACGCCGAACAGTTGGGACGGGACCATTTGGGTGATCGGTT

SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
301 TTCATTGATGGCTTTACAGGCTGCTGTCACCAAGCCCACTAACCACTAGCCAAA
AAGTAACCTACCGAAATAATGTCGACGGACAGTGGTGGGTGATTTGGTGAATCGGTT

FIG. 5

AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrlLeuValAla
1 GATGCCCACTTTCTATCCCAGACAAGCAGACTGGGAGAACCTTCCTTACCTGGTAGCG
CTACGGGTAAAGATAAGGTCTCGTTCTCACCCCTCTGGAAAGGAATGGACCATCGC
TyrglnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
61 TACCAAGCCACCCGTGTCGCGCTAGGGCTCAAGCCCCATCCCCATCGTGGGACACAGATGTTG
ATGGTCGGTGGCACACGGGATCCGAGTTGGGAGGGTAGCACCCCTGGTCTACACC
LYSCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeutYrArgLeu
121 AAGTGTGTTGATTCCGCCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATAACAGACTG
TTCACAAACTAAGGGAGTTGGGGAGGTACCCGGTTAGTGGACTGCGTGGTCACTGTTATGTTAGTACTGAC
GLYAlaValGlnAsnGluIleThrLeuThrHisProvalThrLysTrpIleMetThrCys
181 GGGCCTGTTCAAATGAAATCACCCCTGACGCCACCCAGTCACCAAATACATGACATGC
CCGGACAAAGTCTACTTTAGTGGACTGCGTGGTCACTGCTGGTCAAGTGGTTATGTTAGTACTGAC
MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
241 ATGTCGGCCGACCTGGAGGTCTCACGAGCACCTGGTGGACCCACGGCAACGGCCGAGGACCGA
TACAGCCGGCTGGACCTCCAGCAGTGCTGGACCCACGGCAACGGCCGAGGACCGA
AlaLeuAlaAlaLysLeuSerThrGlyCysValValIleValGlyArgValValLeu
301 GCTTTGGCCGGCTATTGCTGCTCACAGGCTGGTGTCAACAGGCTGGCAGGGTCTGCTG
CGAAACCGGGCATAACGGACAGTTGTCCGACCGTACCCGTCCCAGCAGAAC

-----Overlap with 81-----
SerGlyLysProAlaIleLeuProAspArgGluValLeutYrArg
361 TCCGGAAAGCCGGCAATCACCTGACAGGGAAAGTCTACCGAG
AGGCCCTTCGGCCGTTAGTATGGACTGTTAGGAGATGGCTC

FIG. 6

1 AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAla
GATGCCCACTTCTATCCAGACAAAGCAGAGTGGGAGAACCTCCTTACCTGGTAGCG
CTACGGGTCAAAGATAGGGTCTGTTCGTCACCCCTCTTGGAAAGGAATGGACCACATCGC

61 TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
TACCAAGCCACCGTGCGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCAAGATGTGG
ATGGTTCGGTGGCACACCGCATCCCAGTTGGGGAGGGGGTAGCACCCCTGGTCTACACC

121 LysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeu
AAGTGGTTGATTGCCTCAAGCCACCCCTCATGGCCAACACCCCTGCTATAACAGACTG
TTCACAAACTAACGGAGTCGGTGGAGTACCCGGTTGAGTGGGACGATATGTCTGAC

181 GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCys
GGCGCTGTTAGAATGAAATCACCTGACGCCACCCAGTCACCAAATACATCATGACATGC
CCCGACAAGTCTTACTTAGTGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACG

241 MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
ATGTCGGCCGACCTGGAGGTGTCGTACAGCAGCACCTGGGTGCTCGTGGCGCGTCCTGGCT
TACAGCCGGCTGGACCTCCAGCAGTGTGCTGGACCCACGAGCAACCGCCGCAAGGACCGA

301 AlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeu
GCTTGGCCCGTATTGCCTGTCACACAGGCTGCGTGGTCATAGTGGCAGGGTCGTCTTG
CGAAACCGCCGATAACGGACAGTTGTCGACGCACCAGTATCACCCGTCCCAGCAGAAC

361 SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMet
TCCCGGAAGCCGGCAATCATACCTGACAGGGAAAGTCCTCTACCGAGAGTTCGATGAGATG
AGGCCCTCGGCCGTTAGTATGGACTGTCCCTCAGGAGATGGCTCTCAAGCTACTCTAC

421 GluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
GAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTC
CTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAG

481 LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
AAGCAGAAGGCCCTCGGCCTCCTGAGACCCGCTCCGTCAAGGAGAGGTATGCCCT
TTCGTCTTCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGA

541 AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
GCTGTCAGACCAACTGGAAAAACTCGAGACCTCTGGCGAACATATGTGGAACTTC
CGACAGGTCTGGTTGACCGTTTGAGCTCTGGAAGACCCGCTCGTATAACACCTTGAAG

601 IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
ATCAGTGGGATACAATACTTGGCGGGCTTGTCACCGCTGCCTGTAACCCGCCATTGCT
TAGTCACCCATGTTATGAACCGCCCGAACAGTTGCGACGGACCATTGGGCGGTAAACGA

661 SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
TCATTGATGGCTTTACAGCTGCTGTCACCGCCACTAACCACTAGCCAAA
AGTAACCTACCGAAAAATGTCGACGGACAGTGGTCGGGTGATTGGTATCGGTTT

FIG. 7

-----Overlap with 81-----

1 PheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeu
CTTTACAGCTGCTGTCAACCAGCCACTAACCACTAGCCAAACCCCTCCTTCACATAT .
GAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTGGGAGGAGAAGTTGTATA

61 GlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAla
TGGGGGGGTGGGTGGCTGCCAGCTGCCGCCGGTGCCGCTACTGCCTTGTTGGCG
ACCCCCCCCACCCACCGACGGGTGAGCGGCCGGGACCGCGATGACGAAACACCCGC

121 GlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeu
CTGGCTTAGCTGGCGCCCATCGCAGTGGACTGGGAAGGTCTCATAGACATCC
GACCGAACATCGACCGCGCGGTAGCCGTACAACCTGACCCCTTCAGGAGTATCTGTAGG

181 AlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGlu
TTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGAGCGGTG
AACGTCCCATAACCGCGCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCAC

241 ValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeu
AGGTCCCCTCACGGAGGGACCTGGTCAATCTACTGCCGCCATCCTCTCGCCCGAGCCC
TCCAGGGGAGGTGCCTCTGGACCAGTTAGATGACGGCGTAGGAGAGCGGGCTCGGG

301 ValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAla
TCGTAGTCGGCGTGGCTGTGCAGCAATACTGCGCCGCACGTTGGCCCAGGGCGAGGGGG
AGCATTAGCCGCACCAGACACGTGTTATGACGGCGCGTGCAACCAGGGCCGCTCCCCC

361 ValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
CAGTGCAGTGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAACATGTTCCCC
GTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGG

FIG. 8A

SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAAATCACCGCTCCCCCAGGATGCTCTTCCCACACTCAACGTCGGGGCAGG
AGTAACCTGTAGTGCAGGGGCTACGACAGGGCAGTGAAGTTGCAGGCCGTCC

ThrGlyArgGlyLysProGlyIleTyrrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGGAAAGCCAGGCATCTACAGATTGTGGCACCGGGAGGGCCCTCCGGC
TGACCGTCCCCCTTGGTCCGTTAGATGTCTAACACCGTGGCCCTCGGGGAGGCCG

MetPheAspSerSerValLeuCysGluCystyrAspAlaGlyCysAlaIrrptyrGluLeu
121 ATGTTGACTCGTCCGGTCCCTGTGAGTGCTATGACGCCAGGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAG

ThrProAlaGluThrThrValArgLeuArgAlaTyrrMetAsnThrProGlyLeuProVal
181 ACGCCCGCCGAGACTACAGTTAGGCTACGAGGGTACATGAACACCCCCGGCTTCCGTG
TGCGGGCGGGCTCTGATGTCAATCCGATGCTCGCATGACTTGTGGGGCCATGACTTGT

FIG. 8B

CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTGGAAAGGGCGTCTTACAGGCCACTCATATAAGATGCC
ACGGTCCCTGGTAGAACCTAAACCTCCCCAGAAATGTCCGGAGTGAGTTATCTACGG

HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrlLeuValAlaTyrgln
301 CACTTCTATCCCAGACAAGCAGAGTGGGGAGAACCTCCCTACCTGGTAGCGTACCAA
GTGAAGATAAGGGTCGTCTCGTCTCACCCCTCTGGAAAGGAATGGACCATGGCATGGT

Overlap with 36

AlaThrValCysAlaArgAlaGlnAlaProProSerTrpAspGlnMetTrpLysCys
361 GCCACCCGTTGGCTAGGGCTCAAGCCCCATCGTGGGACCAAGATGTGGAAGTGT
CGTGGCACACCGGATCCCGAGTTGGGGAGGGTAGGCACCCCTGGTCTACACCTTCACA

LeuIleArgLeuLysProThrProLeuLeuTyrrArgLeuGlyAla
421 TTGATTCGGCTCAAGGCCACCCCTCCATGGCCAAACACCCCTGGCTATACAGACTGGGGCT
AACTAAGCGGAGTTCCGGGGAGGTACCCGGTGGAGGATATGTCTGACCCGGGA

FIG. 9A

1 SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAATCACGCTCCCCCAGGATGCTGTCCTCCGCACTCAACGTCGGGGCAGG
AGGTAACTCTGTTAGTGCAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCC
61 ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGGAAAGCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCTCCGGC
TGACCGTCCCCCTCGGTCCGTAGATGTCTAACACCGTGGCCCCCTCGCGGGGAGGCG
121 MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
121 ATGTTGACTCGTCCGTCTCTGTGAGTGTATGACGCAAGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAG
181 ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
181 ACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGCTTCCCCTG
TGCGGGCGGCTCTGATGTCAATCCGATGCTCGATGTACTTGTGGGGCCCCGAAGGGCAC
241 CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTGGGAGGGCGTCTTACAGGCCACTCATATAGATGCC
ACGGTCCTGGTAGAACCTAAAACCTCCCGCAGAAATGTCCGGAGTGAAGTATATCTACGG
301 HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
301 CACTTCTATCCCAGACAAAGCAGAGTGGGAGAACCTTCTTACCTGGTAGCGTACCAA
GTGAAAGATAAGGTCTGTTCGTCTACCCCTCTTGGAAAGGAATGGACCATCGCATGGTT
361 AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
361 GCCACCGTGTGCGTAGGGCTCAAGCCCCTCCCCATCGTGGGACCAAGATGTGGAAAGTGT
CGGTGGCACACCGCAGTCGGAGTTGGGAGGTACCCGGTTGTGGGACGATATGTCCTGACACCTTCACA
421 LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTryArgLeuGlyAla
421 TTGATTGCGCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCT
AACTAACGGAGTTGGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGC
481 ValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSer
481 GTTCAGAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTCG
CAAGTCTTACTTTAGTGGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGC
541 AlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeu
541 GCCGACCTGGAGGTGTCACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGCTTTG
CGGCTGGACCTCCAGCAGTGCCTGGACCCACGAGCAACCGCCGAGGACCGACGAAAC
601 AlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGly
601 GCCCGTATTGCGCTGTCAACAGGCTGCGTGGTCATAGTGGGCAAGGGTCGTCTGTCCGGG
CGCGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTCAGCAGAACAGGCC
661 LysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGlu
661 AAGCCGGCAATCATACCTGACAGGGAACTCTACCGAGAGTTCGATGAGATGGAAGAG
TTCGGCCGTTAGTATGGACTGICCCCTTCAGGAGATGGCTCTAAGCTACTTACCTTC
721 CysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGln
721 TGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTCAAGCAG
ACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTCGTC
781 LysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaVal
781 AAGGCCCTCGGCCCTCTGCAAGACCGCGTCCGTCAGGCAGAGGTTATCGCCCCCTGCTGTC
TTCCGGGAGCCGGAGGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAG

FIG. 9B

GlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSer
841 CAGACCAACTGGAAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGT
GTCTGGTTGACCGTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCA

GlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeu
901 GGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCGCCATTGCTTCATTG
CCCTATGTTATGAACCGCCCCAACAGTGCACGGACCATTGGGGCGGTAAACGAAGTAAAC

MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
961 ATGGGTTTTACAGCTGCTGTCAACCAGCCCACTAACCACTAGCCAAACCCCTCCTCTTCAAC
TACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTATCGGTTGGGAGGACAAGTTG

IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
1021 ATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCGGTGCCGCTACTGCCTTGTG
TATAACCCCCCCCACCCACCGACGGGTCGAGCGGCCACGGCGATGACGGAAACAC

GlyAlaGlyLeuAlaAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
1081 GGCCTGGCTTAGCTGGCGCCGCACTGGCAGTGGACTGGGAAGGTCTCATAGAC
CCCGCACCGAACGACCGCGGCGGTAGCCGTACAACCTGACCCCTCCAGGAGTACTG

IleLeuAlaGlyTyrGlyAlaGlyValAlaAlaGlyAlaLeuValAlaPheLysIleMetSer
1141 ATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGAGC
TAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCG

GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
1201 GGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTCGCCCCGG
CCACTCCAGGGGAGGGTGCCTCCTGGACCAAGTTAGATGACGGGCGGTAGGAGAGCGGGCC

AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
1261 GCCCTCGTAGTCGGCGTGGTCTGTGCAGCAAATCTACTGCCGCCACGTTGGCCCGGGCAG
CGGGAGCATCAGCCGCACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCGCTC

GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
1321 GGGGCAGTGCAGTGGATGAACCGGGCTGATAGCCTTCGCCCTCCGGGGAAACCATGTTCCCC
CCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGG

FIG. 10

LeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrArgGlyLeuAsp
 1 CTCGCCAAAGCTGGTTCGCAATTGGGCATCAAATGCCGTGGCCTACTACCGGGTCTTGAC
 GAGGGCGTTCGACCAGCTAACCCGTAGTTACGGCACCGGATGATGGGCCAGAACTG

ValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThr
 61 GtGTCCGTCAATCCCACCGGGCGATGTCGTTGGCAACCGATGCCCTCATGACC
 CACAGGCAGTAGGGCTGGTCCGCTACAAACAGCAGCACGGCTACGGGAGTA
 CTGG

121 GGCTATACGGCGACTTCGACTCGGTGATAAGCTACAATACGTGTCACTCCAGACAGTC
CCGATATGGCCGCTGAAGCTGACCATTCTGATGTTATGCCACACAGTGGGTCTGTCAAG

AspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaVal
181 GATTTCAGCCTTGACCCCTACCTTACCATTTGAGACAATCACGCTCCCCAGGATGCTGTC
CTAAAGTGGAACTGGATGGAAGTGGTAACTCTGTATTAGTGGGAGGGTCTAACGACAG

clone 35-----
 Ser Arg Thr Gln Arg Arg Gly Arg Thr
 241 T C C G G C A C T C A A C T C G G G C A G G A C T G
 A G G C G T G A G T T G C A G C C C C G T C C T G A C

FIG. 11

-----Overlap with 32-----

1 MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
GATGAACCGGGCTGATAAGCCTCGCCTCCGGGGAAACCATGTTCCCCACGCACTACGT
CTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGGTGCGTGATGCA

61 ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
GCCGGAGAGCGATGCAGCTGCCCGCGTCAGGCCATACTCAGCAGCCTCACTGTAACCCA
CGGCCTCTCGCTACGTCGACGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGT

121 LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
GCTCCTGAGGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACCTCCATGCTCCGGTTC
CGAGGACTCCGCTGACGTGGTCACCTATTGAGCCTCACATGGTGAGGTACGAGGCCAAG

181 TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
CTGGCTAACGGACATCTGGACTGGATATGCGAGGTGTTGAGCGACTTTAACGACCTGGCT
GACCGATTCCCTGTAGACCCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGA

241 LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
AAAAGCTAACGCTCATGCCACAGCTGCCCTGGATCCCCTTGTGTCCTGCCAGCGCGGGTA
TTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGCCCCAT

301 LysGlyValTrpArgVal
TAAGGGGGCTGGCGAGTG
ATTCCCCCAGACCGCTCAC

1 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
 1 GGCTTACATGTCCAAGGCCATGGGATCGATCCTAACATCAGGACCGGGTGAGAACAT
 CCGAATGTTACAGGTTCCGAGTACCCTAGCTAGGATGTAGTCCTGGCCCCACTCTTGTAA

 61 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspC1YGLYcys
 TACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCCTTGCGACGGGGGTG
 ATGGTGACCGTCCGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCAC

 121 SerGlyGlyAlaTyrAspIleIleCysAspGluCysHisSerThrAspAlaThrSer
 CTCGGGGGGCCTTATGACAATAATTGTCAGGAGTGCCACTCCACGGATGCCACATC
 GAGCCCCCCCAGAACTACTGTATTATAAACACTGCTCACGGTGAGGTGCCCTACGGTAG
 IleLeuGlyIleGlyThrValLeuAspGlnAlaGlutAlaIleGlyAlaArgLeuValVal
 181 CATCTTGGCATGGGCATGGCACTGTCCTTGACCAAGGAGACTGCGGGGGAGACTGGTTGT
 GTAGAACCCGTAGCCGTGACAGGAACACTGGTCTGTCAGCCCCCGCTCTGACCAAACA
 LeuAlaThrAlaThrProProGlySerValThrValProHisProAlaIleGluVal
 241 GCTCGCCACCGCCACCCCTCCGGCTCCGTCACTGTGCCCATCCCAAACATCGAGGAGT
 CGAGGGGGTGGGGTGGGAGGGCCGAGGCACTGACACGGGTAGGGTAGGGTTGTAGGTCCCTCA

 301 AlaLeuSerThrThrGlyGluIleProPheTyrglyLysAlaIleProLeuGluValIle
 TGCTCTGTCCACCACCGGAGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
 ACGAGACAGGTGGCCTCTAGGAAAAATGCCGTTCCGATAGGGAGCTTCATA

 361 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysScysAspGluLeuAlaAla
 CAAGGGGGGAGACATCTCATCTTGTCAATTCAAGAAAGAAGTGCAGGAACACTGCCGC
 GTTCCCCCCTCTGTAGAGTAAAGACAGTAAAGTTCTCACGGCTGCTTGAGGGCG

 421 -----Overlap with 37b-----
 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrrargGlyLeuAspValSerVal
 AAAGCTGTCGTCGCATGGCATTGGCCTACTACCGGGTCTTGACGTTGTCGGT
 TTTCGACCAAGCGTAACCCGTAGTTACGGCACCGGATGATGGGCCAGAACTGGCACAGGGCA

 481 -----IleProThr-----
 CATCCCGACCAAG
 GTAGGGCTGGTC

FIG. 12

FIG. 13

CysSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCys
1 ACTGCAGCTCACTGTAACCCAGCTCCTGAGGCAGTCACCAGTGGATAAGCTCGGAGT
TGACGTCGGAGTGACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCA

ThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeu
61 GTACCACTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGT
CATGGTGAGGTACGAGGCCAAGGACCGATCCCTGTAGACCCGTACCTATACGCTCCACA.

-----Overlap with 33b-----
SerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPhe
121 TGAGCGACTTTAACCTGGCTAAAGCTAAAGCTCATGCCACAGCTGCCTGGGATCCCCT
ACTCGCTGAAATTCTGGACCGATTTCGAGTACGGTGTGACGGACCCTAGGGGA

ValSerCysGlnArgGlyTyrLysGlyValTrpArgGlyAspGlyIleMetHisThrArg
181 TTGTGTCCCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTC
AACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCCCTGCCGTAGTACGTGTGAG

CysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGly
241 GCTGCCACTGTGGAGCTGAGATCAGTGACATGTAAAAACGGGACGATGAGGATCGTCG
CGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTGCCCTGCTACTCCTAGCAGC

ProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGly
301 GTCCTAGGACCTGCAGGAACATGTGGAGTGGGACCTCCCCATTAATGCCCTACACCACGG
CAGGATCCTGGACGTCTTGACACCTCACCCCTGGAAGGGTAATTACGGATGTGGTGCC

ProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGlu
361 GCCCCCTGTACCCCCCTCTCGCGCGAAGTACACGTTGCGCTATGGAGGGTGTCTGCAG
CGGGGACATGGGGGAAAGGACGCGGTTGATGTGCAAGCGCGATACTCCCACAGACGTC

GluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAsp
421 AGGAATATGTGGAGATAAGGCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTG
TCCTTATACACCTCTATTCCGTCACCCCTGAAGGTGATGCACTGCCCATCTGATGAC

AsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
481 ACAATCTCAAATGCCGTGCCAGGTCCCATGCCCGAATTTTACAGAAT
TGTTAGAGTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAAGTGTCTTA

FIG. 14A

1 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrile
1 TGCTTACATGTCCAAGGCTCATGGATCGATCCTAACATCAGGACCGGGGTGAGAACAAAT
ACGAATGTACAGGTTCCGAGTAGCCTAGGATTGAGTCCTGGCCCCACTCTTGTAA

61 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
61 TACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTCTGCCACGGCGGGTG
ATGGTGACCGTCGGGGTAGTGCATGAGGTGGATGCCCTAACGGCTGCCGCCAC

121 SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
121 CTCGGGGGGCGCTTATGACATAATAATTGTGACGAGTGCACACTCCACGGATGCCACATC
GAGCCCCCGCGAATACTGTATTAAACACTGCTCACGGTGAGGTGCCACGGGTAG

181 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
181 CATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGT
GTAGAACCCGTAGCCGTGACAGGAACGGTTCTGACGCCCGCTTGACCAACA

241 LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
241 GCTGCCACCGCCACCCCTCCGGCTCCGTCACTGTGCCCCATCCAACATCGAGGGAGGT
CGAGCGGTTGGCGGTGGGGAGGCCGAGTGCACACGGGGTAGGGTTGAGCTCTCCA

301 AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
301 TGCTCTGCCACCACCGGAGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
ACGAGACAGGTGGTGGCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTA

361 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysCysAspGluLeuAlaAla
361 CAAGGGGGGGAGACATCTCATCTCTGTCAATTCAAAGAAGAAGTGCACGAACTCGCCGC
GTTCCCCCCTCTGTAGAGTAGAACAGTAAGTTCTTCACGCTGCTTGAGCGGCG

421 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
421 AAAGCTGGTCGATGGGCATCAATGCCGTGGCTACTACCGCGGTCTGACGTGTCGT
TTCGACCAGCGTAACCCGTAGTTACGGCACCGGATGATGGGCCAGAACACTGCACAGGA

481 IleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThrGlyTyrThr
481 CATCCCAGCCAGCGCGATGTTGTCGTCGTGGCAACCGATGCCCTCATGACCGGGCTATAC
TAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATG

541 GlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrValAspPheSer
541 CGGCGACTTCGACTCGGTGATAGACTACAATACGTGTCACCCAGACAGTCGATTTCAG
GCCGCTGAAGCTGAGCCACTATCTGATGTTATGCACACAGTGGGTCTGTCAGCTAAAGTC

601 LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
601 CCTTGACCCCTACCTCACCATTGAGACAATCACGCTCCCCCAGGATGCTGTCCTCCGCAC
GGAACCTGGGATGGAAGTGGTAACCTCTGTTAGTGCAGGGGGTCTACGACAGAGGGCGTG

661 GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
661 TCAACGTCGGGGCAGGACTGGCAGGGGGAGCCAGGCATCTACAGATTTGTCACCGGG
AGTTGCAAGCCCCCTCTGACCGTCCCCCTCGGTAGATGTCATAAACACCGTGGCCC

721 GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
721 GGAGCGCCCTCCGGCATGTTGACTCGTCCGTCCTGTGAGTGCTATGACGCAGGCTG
CCTCGGGGGAGGCCGTAACAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGAC

781 AlaTrpTyrGluLeuThrProAlaGluThrValArgLeuArgAlaTyrMetAsnThr
781 TGCTTGGTATGAGCTACGCCCCGGAGACTACAGTTAGGCTACGAGCGTACATGAACAC
ACGAACCATACTCGAGTGCAGGGCGCTCTGATGTCATCCGATGCTGCGATGTCAGTACTTG

841 ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
841 CCCGGGGCTTCCCGTGTGCCAGGACCATCTGAATTGGGAGGGCGTCTTACAGGCT
GGGCCCCGAAAGGGCACACGGTCTGGTAGAACCTAAACCCCTCCGCAAGAAATGTCCGGA

FIG. 14B

ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAspLeuProTyr
901 CACTCATATAGATGCCCACTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTCTTA
GTGAGTATATCTACGGGTGAAAGATAGGGCTGTTCTCACCCCTCTTGGAAAGGAAT
LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
961 CCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGA
GGACCATCGCATGGTCGGTGGCACACGCGATCCGAGTTCGGGGAGGGGGTAGCACCC
GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
1021 CCAGATGTGGAAAGTGGTATTGCCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCT
GGTCTACACCTTCACAAACTAACGGAGTTGGGAGGTACCCGGTTGGGGACGA
TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
1081 ATACAGACTGGGCGCTGTTCAAAGAATCACCTGACGCACCCAGTCACCAAATACAT
TATGTCTGACCGCGACAAGTCTTACTTAGTGGGACTGCGTGGTCAGTGGTTATGTA
MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
1141 CATGACATGCATGTCGGCCGACCTGGAGGTCGTACAGAGCACCTGGTGTGTTGGCGG
GTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGCTCGTGGACCCACGAGCAACCGCC
ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
1201 CGTCCTGGCTGCTTGGCCGCGTATTGCCGTCAACAGGCTGCGTGGTCATAGTGGGCAG
GCAGGACCGACGAAACCGGGCGATAACGGACAGTTGTCGACGCACCAAGTATACCCGTC
ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
1261 GGTCGTCTTGTCCGGGAAGCCGCAATCATACCTGACAGGGAGTCCTTACCGAGAGTT
CCAGCAGAACAGGCCCTCGGCCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCAA
AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
1321 CGATGAGATGGAAGAGTGTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGTCGC
GCTACTCTACCTCTCACGAGAGTCGTGAATGGCATGTTAGCTCGTCCCTACTACGAGCG
GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
1381 CGAGCAGTTCAAGCAGAAGGCCCTCGGCCCTCGAGACCAGCTCCGTCAGGCAGAGGT
GCTCGTCAAGTTCGTTCCGGAGCCGGAGGACGCTGGCGCAGGGCAGTCCGTCCA
IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
1441 TATCGCCCCCTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGCGAAGCATAT
ATAGGGGGACGACAGGTCTGGTTGACCGTTTGAGCTCTGGAAGACCCGCTCGTATA
TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
1501 GTGGAACCTCATCAGTGGGATAACAATACTTGGGGCTTGTCAACGCTGCCCTGGTAACCC
CACCTGAAAGTAGTCACCCATGTTATGAACCGCCCCAACAGTTGCGACGGACCATTGGG
AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
1561 CGCCATTGCTTCATTGATGGTTTACAGCTGCTGACCGAGCCACTAACCACTAGCCA
GCGGTAAACGAAGTAACCTACCGAAAAATGTCGACGACAGTGGTCGGGTGATTGGTATCGGT
ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
1621 AACCCCTCCTCTTCAACATATTGGGGGGTGGGTGGCTGCCAGCTCGCCGCCGGTGC
TTGGGAGGAGAAGTTGTATAACCCCCCACCACCGACGGGTCGAGCGGGGGCAGC
AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
1681 CGCTACTGCCCTTGTGGCGCTGGCTAGCTGGCGCCATCGGAGTGTGGACTGGG
GCGATGACGGAAACACCCCGCACCGAACGCGGGTAGCCGTACAACCTGACCC

FIG. 14C

1741 LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
 1741 GAAGGGTCCCTCATAGACATCCTTGCAAGGGTATGGCGCGGGCGTGGCGGGAGCTTTGTGGC
 CTTCCAGGAGTATCTGTAGGAACGTCCCATAACCGCGCCCGCACCGGCCCTCGAGAACACCG
 1801 PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
 1801 ATTCAAGATCATGAGCGGTGAGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGC
 TAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCCTCCTGGACCAGTAGATGACGGCG
 1861 IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
 1861 CATCCTCTCGCCCGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCA
 GTAGGAGAGCGGGGCTCGGGAGCATCAGCCGCACCAAGACACGTCGTTATGACGCGGGCGT
 1921 ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
 1921 CGTTGGCCCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCG
 GCAACCGGGCCCGCTCCCCGTACGTCACCTACTGGCCGACTATCGGAAGCGGAGGGC
 1981 GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
 1981 GGGGAACCATGTTCCCCCACGCACACTACGTGCCGGAGAGCGATGCAGCTGCCGCGTCAC
 CCCCTGGTACAAAGGGGGTGCCTGATGCACGGCCTCTCGCTACGTCACGTCACGGCGCAGTG
 2041 AlalleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
 2041 TGCCATACTCAGCAGCTCACTGTAACCCAGCTCTGAGGCAGTGCACCACTGGATAAG
 ACGGTATGAGTCGTGGAGTGACATTGGGTCGAGGACTCCGCTGACGTGGTCACCTATTG
 2101 SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
 2101 CTCGGAGTGTACCACCTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGGACTGGATATG *
 GAGCCTCACATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATAC
 2161 GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
 2161 CGAGGTGTTGAGCGACTTAAGACCTGGCTAAAGCTAAGCTCATGCCACAGCTGCTGG
 GCTCCACAACCTCGTCAAATTCTGGACCGATTTCGATTGAGTACGGTGTGACCGACC
 2221 IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
 2221 GATCCCCTTGTGTCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGACGGCATCAT
 CTAGGGGAAACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCACCTGCCGTAGTA
 2281 HisThrArgCysHisCysGlyAlaGluIleThrGlyValLysAsnGlyThrMetArg
 2281 GCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAG
 CGTGTGAGCGACGGTACACCTCGACTCTAGTGACCTGTACAGTTTGCCCTGCTACTC
 2341 IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
 2341 GATCGTCGGTCTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAAATGCC
 TAATGCAAGCAGGATCTGGACGTCCTGTACACCTCACCTGGAAAGGGTAATTACGGAT
 2401 ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
 2401 CACCACGGGCCCCCTGTACCCCCCTTCCTGCGCCGAACATACAGTTCGCGCTATGGAGGGT
 GTGGTGCCGGGGACATGGGGGAAAGGACGCGGCTTGTGCAAGCGCGATACCTCC
 2461 SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
 2461 GTCTGCAGAGGAATATGTGGAGATAAGGCAGGTGGGGGACTTCCACTACGTGACGGGTAT
 CAGACGTCTCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCAACTGCCATA
 2521 ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
 2521 GACTACTGACAATCTAAATGCCGTGCCAGGTCCCCATGCCCGAACATTTCACAGAAAT
 CTGATGACTGTTAGAGTTACGGGCACGGTCAAGGTAGCGGGCTTAAAAAGTGTCTTA

FIG. 15

1 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
 1 GGCGGTGGACTTATCCCTGTGGAGAACCTAGAGACAAACCATGAGGTCCCCGGTGTCAC
 CCGCCACCTGAAATAGGGACACCTCTGGATCTCTGGTACTCCAGGGGCCACAAGTG

 61 AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
 61 GGATAACTCCTCTCCACCAGTAGTGCCTCAGAGCTTCAGGTGGCTCACCTCCATGCTCC
 CCTATTGAGGAGAGGTGGTATCACGGGTCTGAAGGTCCACCGAGTGGAGGTACGAGG

 121 ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
 121 CACAGGCAGCGGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGT
 GTGTCCGTCGCCGTTTCGTGGTCCAGGGCGACGTATACTGTCAGTCCCAGTATTCCA

 181 LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
 181 GCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTGGTGCCTACATGTCAGGCC
 CGATCATGAGTTGGGAGACAAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCG

 -----Overlap with 40b-----
 241 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
 241 TCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGGCCAT
 AGTACCCTAGCTAGGATTGTAGTCCTGGCCCCACTCTTGTAAATGGTGACCGTCGGGTA

 301 ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
 301 CACGTACTCCACCTACGGCAAGTTCTGCCGACGGCGGGTGCCTGGGGCGCTTATGA
 GTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACT

 361 IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
 361 CATAATAATTGIGACCGAGTGCACTCCACGGATGCCACATCCATCTTGGCATTGGCAC
 GTATTATTAACACTGCTCACGGTGGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTG

 421 ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
 421 TGTCTTGACCAAGCAGAGACTGCGGGGCGAGACTGGTTGTGCTGCCACCGCCACCC
 ACAGGAACCTGGTTGCTCTGACGCCCGCTCTGACCAACACGAGCGGTGGCGGTGGG

 481 ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
 481 TCCGGGCTCGTCACTGTGCCCATCCACATCGAGGGAGGTGCTCTGTCACCACCGG
 AGGCCCGAGGGCAGTGACACGGGTAGGGTTGTAGTCCTCCAACGAGACAGGTGGTGGCC

 541 GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
 541 AGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCT
 TCTCTAGGGAAAAATGCCGTTCGATAGGGGGAGCTTCATTAGTTCCCCCTCTGTAGA

 601 IlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
 601 CATCTCTGTCATTCAAAGAAGAAGTGCACGAACTCGCCGAAAGCTGGTCGCATTGGG
 GTAGAAGACAGTAAGTTCTTCACGCTGCTTGAGCGGGTTCGACCGAGCGTAACCC

 661 IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
 661 CATCAATGCCGTGGCTACTACCGCGGTCTTGACGTGTCATCCGACCGGGCGA
 GTAGTTACGGCACCGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCT

 721 ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
 721 TGTTGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGT
 ACAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCGCTGAAGCTGAGCCA

 781 IleAspCysAsnThrCys
 781 GATAGACTGCAATACTGTGT
 CTATCTGACGTTATGCACAC

FIG. 16

1 ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIlePro
 1 CTCCCCTGCACTTGCGGGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCAATTG
 GAGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGTCCGTGCGGCTACAGTAAG
 ValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeu
 61 CCGTGCACGCCGGCGGGGTGATAGCAGGGGCAGCCTGCTGCCCCGGCCCATTTCCTACT
 GGCACGCCGCCGCCCCACTATCGTCCCCGTCGGACGACAGCAGGGCCGGTAAAGGATGA
 LysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArg
 121 TGAAAGGCTCCTCGGGGGTCCGCTGGTGTGCCCCGGGGCACGCCGTGGCATATTAA
 ACTTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCCGTGCGGCACCCGTATAAAT
 -----Overlap with
 181 AlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeu
 GGGCCGCGGTGTGCACCCGTGGAGTGGCTAACGGCGGTGGACTTTATCCCTGTGGAGAAC...
 CCCGGCGCACACGTGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTTTGG
 33C-----
 GluThrThrMetArgSerProValPheThrAspAsnSer
 241 TAGAGACAACCATGAGGTCCCCGGTGGTACCGATAACTCCTC
 ATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAGGAG

FIG. 17

1 GlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGly
 1 GGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCCTCTAGG
 CCCACCTCCAACGACCGCGGGTAGTGCCGCATGCGGGTCGTCTGTTCCCCGGAGGATCC
 CysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIle
 61 GTGCATAATCACCAAGGCTAACTGGCCGGACAAAAACCAAGTGGAGGGTGAGGTCCAGAT
 CACGTATTAGTGGTCGGATTGACCGGCCCTGTTGGTACCTCCACTCCAGGTCTA
 ValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrVal
 121 TGTGTCAACTGCTGCCAACCTTCCTGGCAACGTGCATCAATGGGTGTGCTGGACTGT
 ACACAGTTGACGACGGGTTGGAAAGGACCGTTGCACGTAGTTACCCCACACGACCTGACA
 TyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyr
 181 CTACCACGGGGCCGGAACGAGGACCATCGCTCACCCAAAGGGTCCTGTCATCCAGATGTA
 GATGGTGCCTGGCTGTAGCGCAGTGGGTTCCAGGACAGTAGGTCTACAT
 ThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThr
 241 TACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAGGTAGCCGCTATTGAC
 ATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGCAGTCCATCGCGAGTAAC
 -----Overlap with 8h-----
 301 ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
 ACCCTGCACTTGCGGGCTCCTCGGACCTTACCTGGTCACGAGGCACG
 TGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGTCCGTGC

FIG. 18

AsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeu
1 GAACATGTGGAGTGGGACCTCCCCATTAAATGCCTACACCACGGGCCCTGTACCCCCCT
CTTGTACACCTCACCTGGAAGGGTAATTACGGATGTGGTCCCCGGGACATGGGGGA
-----Overlap with 25c-----
ProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIle
61 TCCTGCGCCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGAT
AGGACGCGGCTTGATGTCAAGCGCGATAACCTCCCACAGACGTCTCCTATGCACCTCTA

ArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysPro
121 AAGGCAGGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTAAATGCC
TTCCGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAATTACGGG

CysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPhe
181 GTGCCAGGTCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGA
CACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTAACCTGCCACGCGGATGTATCAA

AlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGlu
241 TGCGCCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGA
ACGCGGGGGGACGTTGGAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTG

TyrProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSer
301 ATACCCGGTAGGGTCGCAATTACCTTGCGAGCCCAGACGGACGTGGCGTGTGACGTC
TATGGGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGCACACTGCAG

MetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGly
361 CATGCTCACTGATCCCTCCATATAACAGCAGAGGCCGGCGAAGGGTGGCGAGGGG
GTACGAGTGAATAGGGAGGGTATATTGTCGTCTCCGGCGCCGCTCCAAACCGCTCCCC

SerProProSerValAlaSerSerAlaSerGlnLeuSerAlaProSerLeuLysAla
421 ATCACCCCCCTCTGGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGC
TAGTGGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCAGGTAGAGAGTTCCG

ThrCysThrAlaAsnHisAspSerProAsp
481 AACTTGCACCGCTAACCATGACTCCCTGAT
TTGAACGTGGCGATTGGTACTGAGGGACTA

FIG. 19

-----Overlap with 14c-----

1 SerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAspHis
1 AGCTCCTCGGCTAGCCAGCTATCGCTCATCTCTCAAGGCAACTTGCACCGCTAACCAT
TCGAGGGAGCCGATCGTCGATAGGCAGGGTAGAGAGTTCCGTTGAACGTGGCGATTGGTA

61 AspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlu
61 GACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAGGCAGGAGATGGGCGGC
CTGAGGGGACTACGACTCGAGTATCTCCGTTGGAGGATACTCCGTCCTACCCGCCG

121 AsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeu
121 AACATCACCAAGGGTTGAGTCAGAAAACAAGTGGTATTCTGGACTCCTCGATCCGCTT
TTGTAGTGGTCCAACTCAGTCTTGTTTACCACTAAGACCTGAGGAAGCTAGGCAGAA

181 ValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArg
181 GTGGCGGAGGGAGGACGAGCAGGGAGATCTCCGTACCCGAGAAAATCCTGCGGAAGTCTCGG
CACCGCCTCCTCGCTCGCCCTCTAGAGGCATGGCGTCTTAGGACGCCAGAG

241 ArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGlu
241 AGATTGCCCCAGGCCCTGCCGTTGGCGCGCCGGACTATAACCCCCCGCTAGTGGAG
TCTAACGGGTCCCGGGACGGGAAACCCGCGCCGGCCTGATATTGGGGGCGATCACCTC

301 ThrTrpLysLysProAspTyrGluProProValValHisGlyCysProLeuProProPro
301 ACGTGGAAAAAAGCCGACTACGAACCACCTGTGGTCATGGCTGTCGCTTCCACCTCCA
TGCACCTTTTCGGGCTGATGCTTGGACACCAGGTACCGACAGGCAGGGTGGAGG

361 LysSerProProValPro
361 AAGTCCCCCTCTGTGGCG
TTCAGGGGAGGACACGGC

FIG. 20

-----ValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyr-----

1 CGTTTGGGCGCGGCCGGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAAACCGACTA
GCAAACCCCGCGCCGGCCTGATATTGGGGGCGATCACCTCTGCACCTTTGGGCTGAT

-----Overlap with 8f-----

61 GluProProValValHisGlyCysProLeuProProLysSerProProValProPro
61 CGAACACCTGTGGTCCATGGCTGCCGCTTCCACCTCAAAGTCCCTCTGTGCCTCC
GCTTGGTGGACACCAGGTACCGACGGCGAAGGTGGAGGTTCAAGGGGAGGACACGGAGG

121 ProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGlu
121 GCCTCGGAAGAAGCGGACGGTGGTCTCACTGAATCAAACCTATCTACTGCCCTGGCGA
CGGAGCCTTCTCGCTGCCACAGGAGTACCTAGTTGGGATAGATGACGGAACCGGCT

181 LeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThr
181 GCTCGCCACCAAGAAGCTTGGCAGCTCCTCAACTCCGGCATTACGGGCAGAACATACGAC
CGAGCGGTGGTCTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTG

241 ThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerPhe
241 AACATCCTCTGAGCCGCCCTCTGGCTGCCCTGGACTCCGACGCTGAGTCCTTGC
TTGTAGGAGACTCGGGCGGGGAAGACCGACGGGGGCTGAGGCTGCGACTCAGGAAACG

FIG. 21

-----Overlap with 33f-----

1 AlaSerArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThr
GCCTCCAGAAGCTTGGCAGCTCCTCAACTTCCGGCATTACGGGCACAAATACGACAACA
CGGAGGTCTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTGT

61 SerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSer
TCCTCTGAGCCCCGCCCTCTGGCTGCCCGCGACTCCGACGCTGAGTCTATTCCCTCC
AGGAGACTCGGGCGGGGAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGG

121 MetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThr
ATGCCCCCCCTGGAGGGGGAGCCTGGGATCCGGATCTTAGCGACGGGTATGGTCAACG
TACGGGGGGGACCTCCCCCTGGACCCCTAGGCCTAGAACGCTGCCCAGTACCAAGTGC

181 ValSerSerGluAlaAsnAlaAspValValCysCysSerMetSerTyrSerTrpThr
GTCAGTAGTGAGGCCAACCGCGAGGATGTCGTGTGCTCAATGCTTACTCTGGACA
CAGTCATCACTCCGGTTGCGCCTCCTACAGCACACGACGAGTTACAGAACGAGTGT

241 GlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSer
GGCGCACTCGTCACCCCGTGCGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAACG
CCGCGTGAGCAGTGGGCAACGCCGCCTTCTGTCTTGACGGTAGTTACGTGATTG

301 AsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSer
AACTCGTTGCTACGTCAACCACATTGGTAGAGTGAGGAGAACGCTACGCACTG
TTGAGCAACGATGCAGTGGTTAACACATAAGGTGGTAGTGCAC

FIG. 22

-----Overlap with 7e-----

1 GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
GGCACCTATGTTATAACCATCTGACTCCTCTCGGGACTGGCGCACACGGCTTGCAG
CCGTGGATACAAATATTGGTAGAGTGAGGAGAACGCTGACCGCTGTTGCCGAACGCT

61 AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
GATCTGGCCGTGGCTGTAGAGCCAGTCGTCTCTCCAAATGGAGACCAAGCTCATCACG
CTAGACCGGCACCGACATCTCGGTCAAGCAGAACAGAGGGTTACCTCTGGTTGAGTAGTGC

121 TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
TGGGGGGCAGATAACGCCGCGTGCAGTACATCATCAACGGCTTGCCTGTTCCGCCGC
ACCCCCCGTCTATGGCGCGCACGCCACTGTAGTAGTTGCCAACGGAACAAAGGCCGCG

181 ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
AGGGGCCGGGAGATACTGCTGGGCCAGCCGATGGAATGGTCTCCAAGGGTTGGAGGTTG
TCCCCGGCCCTATGACGAGCCGGTGGCTACCTTACCAAGAGGTTCCAACCTCCAAC

241 LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
CTGGCGCCCCATCACGGCGTACGCCAGCAGAACAGGGGCCCTAGGGTGCATAATACC
GACCGCGGGTAGTGCCGCATGCCGGTGCCTGTTCCCCGGAGGATCCCACGTATTAGTGG

301 SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
AGCCTAACTGGCCGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCACGT
TCGGATTGACCGGCCCTGTTGGTACCTCCACTCCAGGTCTAACACAGTTGACGA

361 AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrp
GCCCAAACCTTCCTGGCAACGTGCATCAATGGGGTGTGCTGG
CGGGTTGGAGGACCGTTGCACGTAGTTACCCACACGACC

FIG. 23

GlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyr
1 GGCGGTGTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTAT
CCGCCACAACAAGAGCAGCCCAACTACCGCAGTGAGACAGTGGTATAATGTCGCGATA

IleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHis
61 ATCAGCTGGTGTGGCTTCAGTATTTCTGACCAGAGTGGAAAGCGCAACTGCAC
TAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTCGCGTTGACGTG

ValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeuMetCys
121 GTGTGGATTCCCCCCCCTCAACGTCCGAGGGGGCGCGACGCCGTATCTTACTCATGTGT
CACACCTAACGGGGGGAGTTGCAGGCTCCCCCGCGCTGCAGGTAGAATGAGTACACA

AlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPheGlyPro
181 CCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCGTCTCGGACCC
CGACATGTGGGCTGAGACCATAAAACTGTAGTGGTTAACGACGACCGGCAGAACGCTGGG

LeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGlnGlyLeu
241 CTTGGATTCTTCAAGCCAGTTGCTTAAAGTACCCACTTTGCGCGTCCAAGGCCTT
GAAACCTAACGAAAGTTCGGTAAACGAATTGATGGGATGAAACACGCCAGGTTCCGGAA

LeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIle
301 CTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTCATC
GAGGCCAAGACGCCAATCGCCCTTACTAGCCTCCGGTAATGCACGTTACCACTAG

IleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAsp
361 ATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCACTCCTCTCGGGAC
TAATTCAATCCCCCGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAGAACCCCTG

-----Overlap with 7f-----
TrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGln
421 TGGGCGCACACGGCTTGCAGAGATCTGGCGTGGCTGTAGAGCCAGTCGTCTTCTCCAA
ACCCCGGTGTCGCCAACGCTCTAGACCGGCACCGACATCTGGTCAGCAGAACGGGTT

MetGluThrLysLeuIleThrTrpGly
481 ATGGAGACCAAGCTCATCACGTGGGGGC
TACCTCTGGTTCGAGTAGTGCACCCCCCG

FIG. 24

1 GluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
GGGAGTACGTCTCTCTCTGTTCTGCAGACGCGCGCTGCTCCTGCTTG
CCCTCATGCAGCAAGAGGAAGAACGAGCAGACGAGGACAA

61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
GGATGATGCTACTCATATCCCAGCGGAGGCCGTTGGAGAACCTCGTAATACTTAATG
CCTACTACGATGAGTATAGGGTCGCCTCCGCCAAACCTTTGGAGCATTATGAATTAC

121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
CAGCATCCCTGGCCGGACGCACGGTCTTGTATCCTCTCGTGTCTGCTTTGCAT
GTCGTAGGGACCGGCCCTGCG1GCCAGAACATAGGAAGGAGCACAAAGAACGAAACGTA

181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
GGTATTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTCTACGGGATGTGGCCTC
CCATAAAACTTCCCATTCACCCACGGGCCCGCCAGATGTGGAAAGATGCCCTACACCGGAG

241 LeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
TCCTCTGCTCCTGTTGGCGTTGGCCCCAGCGGGCGTACGCGCTGGACACGGAGGTGGCCG
AGGAGGACGAGGACAACCGAACGGGTCGCCGCATGCGCACCTGTGCCCTCACCGGAG

-----Overlap with 11b-----
301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
CGTCGTGGCGGTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCAACCATTACAG
GCAGCACACCGCCACAACAGAGCAGCCAACTACCGCGACTGAGACAGTGGTATAATGT

361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGln
AGCGCTATATCAGCTGGTGTTGGCTCAGAA
TCGCGATATAGTCGACCACGAACACCACCGAAGTCTT

FIG. 25

1 ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
CCAGCCCCCTCTGGCTGCCCGACTCCGACGCTGAGTCCTATTCCATGCCCGG
GGTCGGGGAAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGG

61 LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
CTGGAGGGGGAGCCTGGGATCCGGATCTTAGCGACGGGTATGGTCAACAGTCAGTAGT
GACCTCCCCCTGGACCCCTAGGCCTAGAAATCGCTGCCAGTACCGAGTTGTCAGTCATCA

-----Overlap with 33g-----
121 GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
GAGGCCAACGCGGAGGGATGTCGTGCTGCTCAATGTCCTACTCTGGACAGGCGCACTC
CTCCGGTTGCGCTCCTACAGCACACGACGAGTTACAGGATGAGAACCTGTCAGTCAG

181 ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
GTCACCCCGTGCAGCGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTGAGCAACTCGTT
CAGTGGGGCACGCGGCCCTTGTCTTGTACGGTAGTTACGTGACTCGTTGAGCAAC

241 LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
CTACGTACCAACAAATTGGTGATTCCACCACTCACGCAGTGCTTGCCAAAGGCAGAAG
GATGCAGTGGTGTAAACCACATAAGGTGGTAGCGTCACGAACGGTTCCGTCTTC

301 LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGly
AAAGTCACATTGACAGACTGCAAGTTCTGGACAGCCATTACCAAGGACGTACTCAAGGAG
TTTCAGTGTAAACTGTCTGACGTTCAAGACCTGTGGTAATGGTCTGCATGAGTTCTC

361 ValLysAlaAlaAlaSerLysValLysAlaAsnPhe
GTTAAAGCAGCGGCGTAAAAGTGAAGGCTAACTTC
CAATTTCGCGCCGAGTTTCACTTCCGATTGAAG

FIG. 26A

1 GluTyrValValLeuLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
1 GGGAGTACGTCGTTCTCTGTTCTCTGCTTGAGACGCGCGCTGTGCTCTGCTTG
1 CCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCAGACGAGGACGAACA
61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
61 GGATGATGCTACTCATATCCCAGCGGAGGCCGTTGGAGAACCTCGTAATACTTAATG
61 CCTACTACGATGAGTATAGGGTTCGCCTCCGCCGAAACCTCTGGAGCATTATGAATTAC
121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
121 CAGCATCCCCGGCGGGACGCACGGCTTGTATCCTCCTCGTGTCTCTGCTTTGCAT
121 GTCTGTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAAGAACGAAACGTA
181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
181 GGTATTGAAAGGGTAAGTGGGTGCCCGGGAGCGGGTCTACACCTTCTACGGGATGTGGCCTC
181 CCATAAACTTCCCATTCAACCCACGGGCCCTGCCAGATGTGGAAAGATGCCCTACACCGGAG
241 LeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
241 TCTCTGCTCCTGTTGGCGTTGCCAGCGGCGTACGCGCTGGACACGGAGGTGCCG
241 AGGAGGACGAGGACAACCGCAACGGGGTCGCCGATGCGCAGACCTGTGCCCTCACCCGGC
301 SerCysGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
301 CGTCGTGTCGGGGTTGTTCTCGTCGGGGTGTGGCCTGACTCTGTACCATATTACA
301 GCAGCACACCGCCACAACAAGAGCAGCCCCACTACCGCGACTGAGACAGTGGTATAATGT
361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGln
361 AGCGCTATATCAGCTGGTGCTTGTTGGCTTCAGTATTTCTGACCAGAGTGGAAAGC
361 TCGCGATATAGTCGACCAACACCACCGAAGTCATAAAAGACTGGTCTCACCTCGCG
421 LeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeu
421 AACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGCAGCAGCGTCACTTAC
421 TTGACGTGCACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTAGAATG
481 MetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPhe
481 TCATGTGTGCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCGTCT
481 AGTACACACGACATGTGGCTGAGACCATAACTGTAGTGGTTAACGACGACCGGCAGA
541 GlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGln
541 TCGGACCCCTTGGATTCTCAAGCCAGTTGCTAAAGTACCCCTACTTTGTGCGCGTCC
541 AGCCTGGGAAACCTAAGAAGTTCGGTAAACGAATTTCATGGGATGAAAACACGCGCAGG
601 GlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMet
601 AAGGCCTCTCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAA
601 TTCCGGAAAGAGGCCAAGACGCGCAATCGGCCCTTACTAGCCTCGGTAAATGCACGTTT
661 ValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeu
661 TGTCATCATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCACTCCTC
661 ACCAGTAGTAATTCAATCCCCCGGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAG
721 ArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPhe
721 TTGGGACTGGCGCACACGGCTTGCAGAGATCTGGCGTGGCTGTAGAGCCAGTCGTCT
721 AAGCCCTGACCCGCGTGTGCCAACGCTCTAGACCGGCACCGACATCTCGGTACAGCAGA
781 SerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIle
781 TCTCCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGCAGGAGA
781 AGAGGGTTTACCTCTGGTCGAGTAGTGCAACCCCCCGTCTATGGCGGCCACGCCACTGT
841 IleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAsp
841 TCATCAACGGCTTGCCTGTTCCGCCCCGAGGGGGGGAGATACTGCTGGGCCAGCCG
841 AGTAGTTGCCAACGGACAAAGGCAGGGCGTCCCCGGCCCTATGACGAGCCCAGGTCGGC
901 GlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThr
901 ATGGAATGGTCTCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCAGCAGA
901 TACCTTACCAAGAGGTTCCCCACCTCAACGACCGCGGGTAGTGCGCGATGCGGGTGTCT

FIG. 26B

ArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGlu
961 CAAGGGGCCCTCTAGGGTGCATAATCACCAAGCCTAACTGGCCGGGACAAAAAACCAAGTGG
GTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACC GGCCCTGTTTGTTTGGTCACCC

GlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGly
1021 AGGGT GAGGTCCAGATTGTGTCAACTGCTGCCAACCTTCCTGGCAACGTGCATCAATG
TCCCAC TCCAGGTCTAACACAGTTGACGACGGGTTGGAAGGACCGTTGCACGTAGTTAC

ValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyPro
1081 GGGTGTGCTGGACTGTCTACACAGGGGCCGGAACGAGGGACCATCGCGTACCCAAAGGGTC
CCCACACGACCTGACAGATGGTGCCCCGGCCCTGCTCCTGGTAGCGCAGTGGGTTCCCAG

ValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGly
1141 CTGTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAG
GACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGCAGTTC

SerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
1201 GTAGCCGCTCATTGACACCCCTGC ACTTGC GGCTCCTCGGACCTTACCTGGTCACGAGGC
CATCGGCAGTA ACTGTGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGCTCCG

AlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArg
1261 ACGCCGATGTCATTCCCGTGCGCCGGCGGGGTGATAGCAGGGGCAGCCTGCTGTCGCC
TGC GGCTACAGTAAGGGCACGCCGCCCCACTATCGTCCCCGTCGGACGACAGCGGGG

ProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAla
1321 GGCCCATTTCTACTTGAAAGGCTCTCGGGGGTCCGCTGTTGTGCCCGCGGGGACAG
CGGGGTAAAGGATGAACCTTCCAGGGAGCCCCCAGGCGACAACACGGGGCGCCCCGTGC

ValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIle
1381 CCGTGGGCATATTAAGGGCCGGGTGTGACCCGTGGAGTGGCTAAGGCGGTGGACTTTA
GGCACCCGTATAAATCCGGCGCCACACGTGGGACCTCACCGATTCCGCCACCTGAAAT

ProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSerSerPro
1441 TCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCCTCTC
AGGGACACCTTGGATCTCTGGTACTCCAGGGCCACAAGTGCCTATTGAGGAGAG

ProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLys
1501 CACCA GTAGTGCCCAAGAGCTTCCAGGTGGCTCACCTCATGCTCCCACAGGCAGCGGCA
GTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTCGCCGT

SerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnPro
1561 AAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAACC
TTCTGTGGTTCCAGGGCCGACGTATACGTCGAGTCCGATATTCCACGATCATGAGTTGG

SerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspPro
1621 CCTCTGTGCTGCAACACTGGGCTTGGTGCTTACATGTCCAAGGCTCATGGATCGATC
GGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCCTAGCTAG

AsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyr
1681 CTAACATCAGGACCAGGGGTGAGAACAAATTACCACTGGCAGCCCCATCACGTACTCCACCT
GATTGTAGTCCTGGCCCCACTCTGTAAATGGTGACCGTCGGGGTAGTGCATGAGGTGGA

GlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCysAsp
1741 ACGGCAAGTTCTTGGCGACGGGGGTGCTCGGGGGCGCTTATGACATAATAATTGTG
TGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACTGTATTATAACAC

GluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGlnAla
1801 ACGAGTGCACACTCCACGGATGCCACATCCATCTGGCATCGGCACTGTCCTTGACCAAG
TGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCGTAGCCGTGACAGGAACTGGTTC

GluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerValThr
1861 CAGAGACTGCGGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTCCGTCA
GTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGGTGGCGGTGGGGAGGCCCCGAGGCACT

ValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPheTyr
1921 CTGTGCCCATCCAAACATCGAGGGAGGTGCTGTCCACCACCGGAGAGATCCCTTTT
GACACGGGGTAGGGTTGTAGCTCCTCAAACGAGACAGGTGGTGGCCTCTAGGGAAAAAA

FIG. 26C

1981 GlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSer
 ACGGCAAGGCTATCCCCCTGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGTCAATTGCCGTTCCGATAGGGGAGCTTCATTAGTTCCCCCTCTGTAGAGTAGAACAGTAA

2041 LysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAla
 CAAAGAAGAAGTGCAGACAACTGCCGAAAGCTGGTCGCATTGGGCATCAATGCCGTGG
 GTTTCTTCTCACGCTGCTTGAGCGGCGTTGACCAGCGTAACCGTAGTTACGGCAC

2101 TyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValAla
 CCTACTACCGCGGTCTTGACGTGTCGTACATCCCACCGAGCGGGCATGTTGTCGTGG
 GGATGATGGCGCCAGAACCTGCACAGGCAGTAGGGCTGGTCGCCCTACAACAGCAGCAC

2161 ThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThr
 CAACCGATGCCCTCATGACCGGCTATAACCGGCAGCTCGACTCGGTGATAAGACTGCAATA
 GTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTAT

2221 CysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrileThr
 CGTGTGTCACCCAGACAGTCGATTTCAGCCTGACCCCTACCTCACCTGAGAACATCA
 GCACACAGTGGGTCTGTCAGCTAAAGTCGGAACCTGGGATGGAAGTGGTAACCTGTTAGT

2281 LeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysPro
 CGCTCCCCCAGGATGCTGTCCTCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAAGC
 GCGAGGGGGGTCCTACGACAGAGGGCGTAGGTTGCAGCCCCGTCCTGACCGTCCCCCTCG

2341 GlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSerVal
 CAGGCATCTACAGATTGTGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTCGTCCG
 GTCCGTAGATGTCTAACACCGTGGCCCCCTCGCGGGGAGGCCGTAACAGCTGAGCAGGC

2401 LeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrThr
 TCCCTGTGAGTGTCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCGCCGAGACTA
 AGGAGACACTCACGATACTGCGTCCGACACGAAACATACTCGAGTGCAGGGGGCTCTGAT

2461 ValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGlu
 CAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCCTGTCAGGACCATTTG
 GTCAATCCGATGCTCGCATGTACTGTGGGGCCCCGAAGGGCACACGGTCTGGTAGAAC

2521 PheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThr
 AATTTTGGGAGGGCGTCTTACAGGCCTACTCATATAGATGCCACTTCTATCCCAGA
 TTAAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTAAAGATAAGGGTCT

2581 LysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAlaArg
 CAAAGCAGAGTGGGGAGAACCTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCTA
 GTTTCGTCTCACCCCTCTGGAGGAATGGACCATCGCATGGTGGTGGCACACGCGAT

2641 AlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLysPro
 GGGCTCAAGCCCCCTCCCCCATCGTGGGACAGATGTTGAGTGTGTTGATTGCGCTCAAGC
 CCCGAGTTGGGGAGGGGGTAGCACCCTGGTCTACACCTTACAAACTAACGGAGTTG

2701 ThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIleThr
 CCACCCCTCATGGGCCAACACCCCTGCTATACAGACTGGCGCTGTTCAAGATGAAATCA
 GGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCCGCACAAGTCTTACTTGT

2761 LeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValVal
 CCCTGACGCAACCCAGTCACCAAATACATGACATGTCGGCCGACCTGGAGGTG
 GGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAGC

2821 ThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeuSer
 TCACGAGCACCTGGGTGCTCGTGGCGCGCTGGCTGCTTGGCCGCGTATTGCTGT
 AGTGCTCGTGGACCCACGAGCAACGCCGAGCAGAAACCGGCACAGCACA

2881 ThrGlyCysValValIleValGlyArgValLeuSerGlyLysProAlaIleIlePro
 CAACAGGCTGCGTGGTCATAGTGGCAGGGTCGTCTTGTCGGGAAGCCGGCAATCATAC
 GTTGTCCGACGCACCAAGTATCACCGTCCAGCAGAACAGGCCCTCGGCCGTTAGTATG

2941 AspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuPro
 CTGACAGGGAAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGTCTCAGCACTTAC
 GACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCACCTCTCACGAGAGTCGTGAATG

FIG. 26D

TyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeu
 3001 CGTACATCGAGCAAGGGATGATGCTGCCAGCAGTCAGTCAGCAGAAGGCCCTCGGCCTCC
 GCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTCGTTCCGGAGGCCGGAGG

 GlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLys
 3061 TGCAGACCGCGTCCCGTCAGGCAGAGGTTATGCCCTGCTGTCAGACCAACTGGCAAA
 ACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTT

 LeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAla
 3121 AACTCGAGACCTCTGGCGAAGCATATGTGGAACCTCATCAGTGGATAACAATACTTGG
 TTGAGCTTGGAAAGACCCGCTTCGTATCACCTGAAGTAGTCACCCTATGTTATGAACC

 GlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAla
 3181 CGGGCTTGTCACGCTGCCATTGCTTAACCCCGCCATTGCTCATTGATGGCTTTACAGCTG
 GCCCGAACAGTTGCGACGGACCATTGGGGCGTAACGAAGTAACCTACCGAAAATGTCGAC

 ValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpVal
 3241 CTGTCACCAGCCCCACTAACCAACTAGCCAAACCCCTCTTCACACATATTGGGGGGGGTGGG
 GACAGTGGTGGGTGATTGGTGATCGGTTGGGAGGAAGTTGTATAACCCCCCCCACCC

 AlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGly
 3301 TGGCTGCCAGCTGCCGCCGGTGCCTACTGCCCTTGTGGCGCTGGCTTAGCTG
 ACCGACGGGTCGAGCGGCCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAACATCGAC

 AlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGly
 3361 GCGCCGCCATGGCAGTGTGGACTGGGGAAAGGTCTCATAGACATCCTTGCAAGGTATG
 CGCGCGGTAGCCGTACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCACATAC

 AlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThr
 3421 GCGCGGGCGTGGCGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCCTCCA
 CGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGAGGT

 GluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyVal
 3481 CGGAGGACCTGGTCAATCTACTGCCGCATCCTCTGCCGGAGCCCTCGTAGTCGGCG
 GCCTCTGGACCAGTTAGATGACGGCGGTAGGAGAGCGGGCCTGGGAGCATCAGCCGC

 ValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrpMet
 3541 TGGTCTGTGCAAGCAATACTGCCGGCACGTTGGCCGGCGAGGGGGCAGTGCAGTGGG
 ACCAGACACGTCATTGACGCCGGCGTCAACCGGGCCCTCCCCGTACGTACCT

 AsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValPro
 3601 TGAACCGGCTGATAGCCTTCGCTCCGGGGAAACCATGTTCCCCACGCACACTACGTGC
 ACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGGGTGGGTGATGCACG

 GluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeu
 3661 CGGAGAGCGATGCACTGCCCGCTACTGCCATACTCAGCAGCCTACTGTAACCCAGC
 GCCTCTCGCTACGTCACGGCGCAGTACGGTATGAGTCGTCGGAGTACGACATTGGTCG

 LeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySerTrp
 3721 TCCTGAGGCAGCTGCACCAAGTGGATAAGCTGGAGTGTACCACTCCATGCTCCGGTTCT
 AGGACTCCGCTGACGTGGTCACCTATTGAGCCTCACATGGTGAGGTACGAGGCCAAGGA

 LeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeuLys
 3781 GGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTGAGCGACTTTAAGACCTGGCTAA
 CCGATTCCCTGTAGACCCCTGACCTATACGCTCCACAACCGTCAAGTAAATTCTGGACCGATT

 AlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrLys
 3841 AAGCTAAGCTCATGCCACAGCTGCCCTGGATCCCTTGTGTCCTGCCAGCGCGGGTATA
 TTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGCCCATAT

 GlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIleThr
 3901 AGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATCA
 TCCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTACACCTCGACTCTAGT

 GlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMetTrp
 3961 CTGGACATGTCAAAAACGGGACGATGAGGATGTCGGTCTAGGACCTGCAGGAACATGT
 GACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTTGTACA

FIG. 26E

SerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaPro
4021 GGAGTGGGACCTCCCCATTAAATGCCCTACACCACGGGCCCCGTACCCCTTCCTGC
CCTCACCCCTGGAAGGGGTAATTACGGATGTGGTGCCCAGGGACATGGGGGAAGGACGCG

AsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGlnVal
4081 CGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGGCAGG
GCTTGATGTGCAAGCGCGATACTCCCACAGACGTCTCCTTACACCTTACACCTCTATTCCGTCC

GlyAspPheHisTyrValThrGlyMetThrThrAsnLeuLysCysProCysGlnVal
4141 TGGGGGACTTCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTGCCAGG
ACCCCCCTGAAGGTATGCACTGCCACTGACTGTTAGAGTTACGGCACGGTCC

ProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProPro
4201 TCCCCATCGCCCGAATTTTCACAGAATTGGACGGGTGCGCCTACATAGGTTGCC
AGGGTAGCGGGCTTAAAAAGTGTCTAACCTGCCACGCGGATGTATCAAACGCGGGG

CysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProVal
4261 CCTGCAAGCCCTTGCTCGGGAGGGAGGTATCATTAGAGTAGGACTCCACGAATACCGG
GGACGTTCGGGAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGCC

GlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeuThr
4321 TAGGGTCGCAATTACCTTGCGAGGCCGAACCGGACGTGGCGTGTGACGTCCATGCTCA
ATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGACAACACTGCAGGTACGAGT

AspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProPro
4381 CTGATCCCTCCCATAAACAGCAGAGGCCGGCGAAGGTTGGCGAGGGGATCACCCC
GACTAGGGAGGGTATATTGTCGTCGCCGGCCGCTTCAACCGCTCCCTAGTGGGG

SerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThr
4441 CCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCAAGGCAACTGCA
GGAGACACCGGTCGAGGAGCCGATCGGTGATAGGGAGGTAGAGAGTTCCGTTGAACGT

AlaAsnHisAspSerProAspAlaGluIleGluAlaAsnLeuLeuTrpArgGlnGlu
4501 CCGCTAACCATGACTCCCCGTGCTGAGCTCATAGAGGCCAACCTCTATGGAGGCAGG
GGCGATTGGTAUTGAGGGGACTACGACTCGAGTATCTCGGTTGGAGGATACCTCCGTCC

MetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPhe
4561 AGATGGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGGACTCCT
TCTACCCGCCCTGTAGTGGTCCAACTCAGTCTTGTGTTACCAACTAACGACTGAGGA

AspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArg
4621 TCGATCCGCTTGTGGCGAGGGACGAGCGGGAGATCTCGTACCCGAGAAATCCTGC
AGCTAGGCGAACACCGCCTCCTCTGCTGCCCTAGAGGCATGGCGTCTTAGGACG

LysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProPro
4681 GGAAGTCTCGGAGATTGCCCTGCCGTTGGCGCGCCGGACTATAACCCC
CCTTCAGAGCCTCTAACGGGTCGGGACGGCAAAACCGCGCCGGCTGATATTGGGGG

LeuValGluThrTrpLysProAspTyrGluProProValValHisGlyCysProLeu
4741 CGCTAGTGGAGACGTGGAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGTCCGC
GCGATCACCTCTGACACCTTTCGGGCTGATGCTTGGACACCAGGTACCGACAGGCG

ProProProLysSerProProValProProProArgLysLysArgThrValValLeuThr
4801 TTCCACCTCAAAGTCCCCCTCTGTGCCTCCGCCCTGGAAAGAAGCGGACGGTGGCTCTCA
AAGGTGGAGGGTTCAAGGGAGGACACGGAGGCGGAGCCTTCTCGCCTGCCACCAAGGAGT

GluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSer
4861 CTGAATCAACCCCTATCTACTGCCCTGGCCGAGCTGCCACCAAGAAGCTTGGCAGCTCCT
GACTTAGTTGGGATAGATGACGGAACCGGCTGAGCGGTGGTCTCGAAACCGTCGAGGA

ThrSerGlyIleThrGlyAspAsnThrThrSerSerGluProAlaProSerGlyCys
4921 CAACTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCAGCCCTTG
GTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGACTGGGGCGGGGAAGACCGA

ProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGly
4981 GCCCCCCCGACTCCGACGCTGAGTCCTATTCCCATGCCCTGGAGGGGAGCCTG
CGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGACCTCCCCCTCGGAC

FIG. 26F

AspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAsp
5041 GGGATCCGGATCTTAGCAGCGGTATGGTCACGGTCAGTAGTGAGGCCAACGGAGG
CCCTAGGCCTAGAATCGTCCCAGTACCAAGTTGCCAGTCATCACTCCGGTTGCGCCTCC
ValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAla
5101 ATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGGCGACTCGTCACCCCGTGCGCCG
TACAGCACACGACGAGTTACAGAAATGAGAACCTGTCCCGTGAGCAGTGGGCACGCCG
GluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsnLeu
5161 CGGAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGTGTGCTACGTACCAATT
GCCTTCTTGTCTTGACGGTAGTTACGTGATTGAGCAACGATGCAGTGAGTGGTAACT
ValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArg
5221 TGGTGTATTCACCACCTCACGAGTGCTTGCCAAAGGCAGAAGAAAGTCACATTGACA
ACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTCCGTCTTCAGTGTAAACTGT
LeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAlaSer
5281 GACTGCAAGTTCTGGACAGCATTACCAAGGAGCTACTCAAGGAGGTTAAAGCAGCGGC
CTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCTCCAATTTCGTGCCGCA
LysValLysAlaAsnLeu
5341 CAAAAGTGAAGGCTAACTTG
GTTTCACTCCGATTGAAC

FIG. 30

GlyGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCys
1 GGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGAAGCGCGTACTGACAAGTAGCTGT
CCCCCCCCTTGACGCCATAGCGTCCACGGCGCGTTCGCGCATGACTGTTGATCGACA
GlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGln
61 GGTAAACACCCCTCACTTGTACATCAAGGCCGAGCAGCCTGTCGAGCCGAGGGCTCCAG
CCATTGTGGAGTGAACAAATGTAGTTCCGGGCTCGTCGGACAGCTCGGCGTCCCAGGGTC
-----Overlap with 19g-----
AspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyVal
121 GACTGCACCATGCTCGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTC
CTGACGTGGTACGAGCACACACCCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAG
GlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaPro
181 CAGGAGGACGCCGAGCCTGAGAGCCTCACGGAGGCTATGACCAAGGTACTCCGCC
GTCCTCCTGCGCCGCTCGGACTCTCGGAAGTGCCTCGATACTGGTCCATGAGGCGGGGG
ProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsn
241 CCTGGGGACCCCCCACAACCAGAAATCGACTTGGAGGCTCATAACATCATGCTCCTCCAAC
GGACCCCTGGGGGTGTTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTG
ValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThr
301 GTGTCAGTCGCCACGACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCCTACA
CACAGTCAGCGGGTGCTGCCCGACCTTCTCCAGATGATGGAGTGGCACTGGGATGT
ThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeu
361 ACCCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCATTCGTTGGCTA
TGGGGGGAGCGCTCTGACGCAACCTCTGTCGTTGTGAGGTCAGTTAAGGACCGAT
GlyAsnIleIleMetPheAlaProThrLeuTrpAla
421 GGCAACATAATCATGTTGCCACACTGTGGCG
CGTTGTATTAGTACAAACGGGGGTGTGACACCCGC

FIG. 27

IlePheLeuIleArgMetTyrValGlyGlyValGluIleHisArgLeuGluAlaAlaCysAsn
1 CCATATTAAATCAGGATGTACGTGGAGGGTCTCGAACACAGGCTGGAAAGCTGCCTGCGA
GGTATAATTAGTCCTACATGCCACCCCTCCCAGCTGTGTCGACCTTGACGGACG
TrpThrArgGlyGluArgCysAspLeuGluAspArgSerGluLeuSerProLeu
61 ACTGGACGGGGCGGAACGTTGGCATCTGGAAAGAACAGGGACAGGGTCCAGCTCAGCCCC
TGACCTGGCCCCCGCTGCAACCGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGCA
LeuLeuThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
121 TACTGCTGACCACTACACAGTGGCAGGTCTCCCGTGTCTCACAAACCTAACAGCCT
ATGACGACTGGTGTATGTGTACCGTCCAGGAGGGACAAGGAAGTGTGGATGGTGGAA
SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrglyVal
181 TGTCCACCGGCCCTCATCCACCTCACCAGAACATGTGGACGTGCAGTACTTGTACGGGG
ACAGGGCCGGAGTAGGTGGAGGTGGTCTTGTAAACACCTGCACGTCTATGAACATGCC

GlySerSerIleAlaSerTrpAlaIleLysTrpGluIufryValValLeuLeuPheLeuLeu
241 TGGGGTCAAGCATCGCGTCCTGGCCATTAAGTGGAGTACGTCTGTCTCTGTGGTGG
ACCCCAAGTTCGTAGGGCAGGACCCGGTAATTCAACCTCTATGCAGCAAGGACAAGGAAG

LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
301 TGCTTGAGACGGCGGGCTGCTGCTGGATGATGCTACTCATATCCCAAGCGG
ACGAAACGTCTGGCGGGCAGACGGAGGACAAACCTACTACGATGAGTATAGGGTTGCC
-----Overlap with 14i-----
AlaAlaLeuGluAsnIleValIleLeuAsnAlaSerLeuAlaGlyThrIsglyLeu
361 AGGGGGCTTGGAGAACCTCGTAATACTTAATGCAGCCTGGCCGGGACGCAACGGTC
TCCGCCAAACCTCTTGGAGCATTTACGTCGTAGGGACCCCTGCGTGCCAG

Val
421 TTGTATC
AACATAG

FIG. 28

-----Overlap with 39c-----

1 LeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGlu
TGCTCAAGGAGGTTAAAGCAGCGCGTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGG
ACGAGTTCCTCCAATTTCGTCGCCGCAGTTTCACTTCCGATTGAACGATAAGGCATCTC

61 AlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAsp
AAGCTTGAGCCTGACGCCAACACTCAGCAAATCCAAGTTGGTTATGGGGCAAAAG
TTCGAACGTCGGACTGCAGGGGTGTGAGTCGGTTAGGTTCAAACCAATACCCGTTTC

121 ValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeu
ACGTCCGTGCCATGCCAGAAAGGCCGTAAACCCACATCAACTCCGTGTGGAAAGACCTTC
TGCAGGCAACGGTACGGTCTTCCGGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAG

181 GluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysVal
TGGAAAGACAATGTAACACCAATAGACACTACCATCATGGCTAAGAACGAGGTTTCTGCG
ACCTTCTGTTACATTGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAAAGACGC

241 GlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyVal
TTCAGCCTGAGAAGGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCG
AAGTCGGACTCTCCCCCAGCATTGGTCAGCAGAGTAGCACAAAGGGCTAGACCCG

301 ArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMet
TGCAGCTGTGCGAAAAGATGGCTTGTACGACGTGGTTACAAAGCTCCCTGGCCGTGA
ACGCGCACACGTTTACCGAAACATGCTGCACCAATGTTGAGGGGAACCGGGCACT

361 GlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAla
TGGGAAGCTCCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCTCGTGCAAG
ACCCTTCGAGGATGCTTAAGGTATGAGTGGCCTGTCGCCAACTTAAGGAGCACGTT

421 TrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThr
CGTGGAAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATAACCGCTGCTTGAATCCA
GCACCTTCAGGTTTTGGGTTACCCCAAGGCATACTATGGCGACGAAACTGAGGT

481 ValThrGluSerAspIleArgThrGluGluAla
CAGTCACTGAGAGCGACATCCGTACGGAGGGAGGCA
GTCAGTGACTCTCGCTGTAGGCATGCCTCTCCGT

FIG. 29

1 GluPheLeuValGlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThr
GAATTCCCTCGTGCAGCGTGGAAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACC
CTTAAGGAGCACGTCGCACCTTCAGGTCTTTGGGGTACCCCAAGAGCATACTATGC
-----Overlap with 35f-----
61 ArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGln
CGCTGCTTGACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAA
GCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCTCCCGTTAGATGGTT
121 CysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeuTyr
TGGTGTGACCTCGACCCCCAAGGCCGCGTGGCCATCAAGTCCCTCACCGAGAGGCTTAT
ACAACACTGGAGCTGGGGTTCGGGCGCACCGTAGTTAGGGAGTGGCTCTCCGAAATA
181 ValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAla
GTTGGGGGCCCTCTTACCAATTCAAGGGGGAGAACACTGCGGCTATCGCAGGTGCCGCG
CAACCCCCGGAGAACATGGTTAAGTCCCCCTCTTGACGCCGATAGCGTCCACGGCGCG
241 SerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAla
AGCGGCGTACTGACAACTAGCTGTGGTAACACCCCTCACTTGCTACATCAAGGCCCCGGCA
TCGCCGCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACGATGTAGTTCCGGGCCCCT
301 AlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuVal
GCCTGTCGAGCCGCAGGGCTCAGGACTGCAACCATGCTCGTGTGGCGACGACTTAGTC
CGGACAGCTGGCGTCCCGAGGTCTGACGTGGTACGAGCACACACCGCTGCTGAATCAG
361 ValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTTATCTGTGAAAGCGCGGGGTCCAGGAGGACGCGGCGAG
CAATAGACACTTCCGCGCCCCCAGGTCTCGCGCCGCTC

FIG. 31

1 GLYAlaGLYArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
CGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCCTACAAACCCCCCTCGCCGAGAGC
GCCGCACCTTTCTCCAGATGGAGTGGCACTGGGATGTGGATGGGGAGGCTCTCG
-----Overlap with 26g-----
61 AlaTrpGlutThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
TGGCTGGAGACAGCAAGAACACACTCCAGTCATTCCCTGGCTAGGGAAACATAATCATGTT
ACGCACCCCTCTGTCGTTCTGTGAGGTCAGTAAAGGACCGATCCGGTGTGATTAGTACAA

121 AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
TGCCCCCACACTGTGGCGAGGATGACTGACCCATTCTCTTAGCGCTCCTTATAGC
ACGGGGGTGTGACACCCGCTCCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCG

181 ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
CAGGGACCAGCTTGAAACAGGCCCTCGATTCGGAGATCTACGGGGCCTACTCCATAGA
GTCCCCTGGTCAACTTGTCGGGAGCTAACGCTCTAGATGCCGGACGATGAGGTATCT

241 ProLeuAspLeuProProIleIleGlnArgLeu
ACCACTTGATCTACCTCAATCATCAAAGACTC
TGGTGAACTAGATGGAGGTAGTAAGTTCTGAG

FIG. 32A

IlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsn
1 CCATATTTAAATCAGGATGTACGTGGGAGGGGTCGAACACAGGCTGGAAGCTGCCTGCA
GGTATAAATTAGTCCTACATGCACCCCTCCCCAGCTTGTGCCGACCTCGACGGACGT
TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
61 ACTGGACGCGGGGCGAACAGTTGCGATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCCGT
TGACCTGCGCCCCGCTTGCAACGCTAGACCTCTGTCCCTGTCCAGGCTCGAGTCGGGCA
LeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
121 TACTGCTGACCACTACACAGTGGCAGGTCTCCGTGTTCTCACAAACCTACCGACCT
ATGACGACTGGTATGTCACCGTCCAGGGAGGGACAAGGAAGTGTGGGATGGTCGGA
SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyVal
181 TGTCACCAGGCTCATCCACCTCACAGAACATTGTTGGACGTGCACTTGACGGGG
ACAGGTGGCCGGAGTAGGTGGAGGTGGCTTGTAAACACCTGCACGTCATGAACATGCC
GlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeu
241 TGGGGTCAAGCATCGCGTCTGGGCCATTAAAGTGGGAGTACGTCGTTCTCCTGTTCC
ACCCAGTCGTAGCGCAGGACCCGGTAATTCACCTCATGCAGCAAGAGGACAAGGAAG
LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
301 TGCTTGCAAGACGCGCGTCTGCTCTGCTTGATGACTCATATCCCAGCG
ACGAACGTCTGCGCGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCGCC
AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
361 AGGCAGGCTTGGAGAACCTCGTAATACTTAATGCAAGCATCCCTGGCCGGACGCACGG
TCCGCCGAAACCTCTGGAGCATTAAGAACGCTAGTGTAGGGACCGGCCCTGCGTGCAG
ValSerPheLeuValPhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGly
421 TTGTATCCTCCTCGTGTGTTCTGCTTGATGGTATTGAAAGGGTAAGTGGGTGCC
AACATAGGAAGGAGCACAAGAACGAAACGTACCATAAACTTCCATTCAACCCACGGGC
AlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGln
481 GAGCGGTCTACACCTCTACGGGATGTGGCCTCTCCTCTGCTCTGTTGGCGTTGCC
CTCGCCAGATGTGGAGATGCCCTACACCGGAGAGGAGGACGAGGACAACCGCAACGGGG
ArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGlyValValLeuValGly
541 AGCGGGCGTACGCGCTGGACACGGAGGTGGCCGCGTGTGTTGGCGGTGTTCTCGTC
TCGCCCGCATGCGCAGCTGTGCCCTCACCGGCGCAGCACACGCCACAACAGAGCAGC
LeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrp
601 GGTTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTATATCAGCTGGTGCTTGGT
CCAACCTACCGCGACTGAGACAGTGGTATAATGTCGCGATATAGTCGACCACGAACACCA
LeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsn
661 GGCTTCAGTATTTCTGACCAGAGTGGAGCGCAACTGCACGTGTGGATTCCCCCCC
CCGAAGTCATAAAAGACTGGTCTCACCTCGCGTGTGACGTGACACCTAACGGGGAGT
ValArgGlyGlyArgAspAlaValIleLeuLeuMetCysAlaValHisProThrLeuVal
721 ACGTCCGAGGGGGCGCGACGCCGTACCTTACTCATGTGTGCTGTACACCGACTCTGG
TGAGGCTCCCCCGCGCTCGGGAGTAGAATGAGTACACACGACATGTGGCTGAGACC
PheAspIleThrLysLeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSer
781 TATTTGACATACCAAAATTGCTGCTGGCCGTCTCGGACCCCTTGGATTCTCAAGGCC
ATAAAACTGTAGTGGTTAACGACGACCGGAGAACCTAACGAGCTGGGAAACCTAACGAGT
LeuLeuLysValProTyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAla
841 GTTTGCTAAAGTACCCACTTTGTGCGCGTCAAGGCCTCTCGGTTCTGCGCGTAG
CAAACGAATTTCATGGGATGAAACACGCGCAGGTTCCGGAGAGGCAAGACGCGCAATC

FIG. 32B

ArgLysMetIleGlyGlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThr
901 CGCGGAAGATGATCGGAGGCCATTACGTCAAATGGTCATCATTAAGTTAGGGCGCTTA
GCGCCTTCTACTAGCTCCGGTAATGCACGTTACCAAGTAGTAATTCAATCCCCGCGAAT
GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
961 CTGGCACCTATGTTATAACCACCTCACTCCTCTCAGGACTGGGCGACAACGGCTTGC
GACCGTGGATACAAATATTGGTAGAGTGAGGAGAACCCCTGACCGCGTGGCCGAACG
AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
1021 GAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCAAATGGAGACCAAGCTCATCA
CTCTAGACCGGCACCGACATCTGGTCAGCAGAACAGAGGGTTACCTCTGGTCTGGAGTAGT
TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
1081 CGTGGGGGGCAGATAACCGCCGCGTGCAGGACATCATCACACGGCTTGCCTGTTCCGCC
GCACCCCCCGTCTATGGCGGCCACGCCACTGTAGTAGTTGCCAACGGACAAAGGCCGG
ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
1141 GCAGGGGCCGGGAGATACTGCTGGGCCAGCCGATGGAATGGCTCCAAGGGGTGGAGGT
CGTCCCAGGCCCTCATGACGAGCCCCTGGCTACCTTACCAAGAGGTTCCCACCTCCA
LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
1201 TGCTGGCGCCCATCACGGCGTACGCCAGCAGAACAGGGCTCCTAGGGTGCATAATCA
ACGACCGCGGGTAGTGCCGCATGCCGTCTGTTCCCAGGATCCCACGTATTAGT
SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
1261 CCAGCCTAACTGGCCGGGACAAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGCACTG
GGTCGGATTGACCGGCCCTGTTGGTCACCTCCACTCCAGGTCAAACACAGTTGAC
AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAla
1321 CTGCCCCAACCTTCTGGCAACGTGCATCAATGGGTGTGCTGGACTGTCACCAACGGGG
GACGGGTTTGGAAAGGACCGTTGCACGTAGTTACCCACACGACCTGACAGATGGTCCCC
GlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyrThrAsnValAsp
1381 CCGGAACGAGGACCATCGCGTACCCAGGGCTGTCACTCCAGATGTACCAATGTAG
GGCTTGCTCTGGTAGCGCAGTGGTCCAGGACAGTAGGTCTACATATGGTACATC
GlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThrProCyrThrCys
1441 ACCAAGACCTTGTGGCTGGCCGCTCCGCAAGGTAGCCGCTCATTGACACCCCTGCACTT
TGTTCTGGAACACCCGACCGGGCGAGGCGTCCATGGCGAGTAACGTGGGACGTGAA
GlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIleProValArgArgArg
1501 GCGGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCATTCCGTGCGCCGGC
CGCCGAGGAGCCTGGAAATGGACCAAGTGCTCCGTGGCTACAGTAAGGGCACGCCGG
GlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSer
1561 GGGGTGATAGCAGGGGCAGCCTGCTGTCGCCCCGGCCCATTCTACTTGAAAGGCTCCT
CCCCACTATCGTCCCCGGACAGCTGGGCCGGTAAAGGATGAAACTTCCGAGGA
GlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCys
1621 CGGGGGGTCCGCTGTTGTGCCCCGGGGCACGCCGTGGCATATTAGGGCCGCGGTGT
GCCCGAGGCGAACACAGGGGCGCCCCGTGGCACCGTATAAATCCGGCGCCACA
ThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeuGluThrThrMet
1681 GCACCCGTGGAGTGCGTAAGGCAGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAACCA
CGTGGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTCTGGATCTCTGGT

FIG. 32C

ArgSerProValPheThrAspAsnSerSerProProValValProGlnSerPheGlnVal
1741 TGAGGTCCCCGGTGTTCACGGATAACTCTCTCCACCAAGTAGTGCCCCAGAGCTTCCAGG
ACTCCAGGGGCCACAAGTGCCTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCC

AlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAla
1801 TGGCTCACCTCCATGCTCCCACAGGCAGCGGCAAAGCACCAAGGTCCGGCTGCATATG
ACCGAGTGGAGGTACGAGGGTGTCCGTCGCCGTTTCGTGGTCCAGGGCCGACGTATAC

AlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGly
1861 CAGCTCAGGGCTATAAGGTGCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTG
GTCGAGTCCCGATATTCACGATCATGAGTTGGGGAGAACGACGTTGTGACCCGAAAC

AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
1921 GTGCTTACATGTCCAAGGCTCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAA
CACGAATGTACAGGTTCCGAGTACCCTAGCTAGGATTGATGTCCTGGCCCCACTTTGTT

ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
1981 TTACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTCCCTGCGACGGGGGT
AATGGTGACCGTCGGGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCA

SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
2041 GCTCGGGGGCGCTTATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACAT
CGAGCCCCCGCGAATACTGTATTAAACACTGCTCACGGTGAGGTGCCCTACGGTGA

IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
2101 CCATCTTGGGCATCGCACTGTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTG
GGTAGAACCGTAGCGTGACAGGAAGTGGTCTGACGCCCGCTCTGACCAAC

LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
2161 TGCTCGCCACCGCCACCCCTCCGGCTCGTCACTGTGCCCCATCCAAACATCGAGGAGG
ACGAGCGGTGGCGGTGGGAGGGCCGAGGCAGTGACACGGGTAGGGTTGAGCTCTCC

AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
2221 TTGCTCTGTCACCACCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAA
AACGAGACAGGTGGTGGCCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATT

LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
2281 TCAAGGGGGGGAGACATCTCATTTCTGTCATTCAAAGAAGTGCAGCAACTGCCG
AGTTCCCCCTCTGTAGAGTAGAACAGTAAGTTCTTCACGCTGCTTGAGCGGC

LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
2341 CAAAGCTGGTCGATTGGCATCAATGCCGTGGCTACTACCGCGGTCTGACGTGTCGG
GTTTCGACCAAGCGTAACCGTAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGC

IleProThrSerGlyAspValValValValAlaThrAspAlaLeuMetThrGlyTyrThr
2401 TCATCCCACCGCAGCGCGATGTTGTCGTGGCAACCGATGCCCTCATGACCGGGCTATA
AGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTGGCTACGGGAGTACTGCCGATAT

GlyAspPheAspSerValIleAspCysAsnThrCysValThrGlnThrValAspPheSer
2461 CCGGCGACTTCGACTCGGTGATAGACTGCAATACGTGTCACCCAGACAGTCGATTCA
GGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTCTGTCAGCTAAAGT

LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
2521 GCCTTGACCCCTACCTCACCATTGAGACAATCACGCTCCCCCAGGATGCTGTCTCCCGCA
CGGAACCTGGGATGGAAGTGGTAACTCTGTTAGTGCAGGGGGTCCCTACGACAGAGGGCGT

GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
2581 CTCACACGTGGGGCAGGACTGGCAGGGGGAAAGCCAGGCATCTACAGATTGTGGCACCGG
GAGTTGCAGCCCCGTCCTGACCGTCCCCCTCGGTCCGTAGATGTCTAAACACCGTGGCC

GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
2641 GGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCCTCTGTTGAGTGCTATGACGCAAGGCT
CCCTCGGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGA

AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
2701 GTGCTTGGTATGAGCTCACGCCGCGAGACTACAGTTAGGCTACGAGCGTACATGAACA
CACGAACCATACTCGAGTGCAGGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGT

FIG. 32D

ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
 2761 CCCC GG GGG CTT C CCG TGT GCC AGG ACC ATCTT GA ATT T GGG AGGG CGT CTT ACAGG C
 GGG G CCCCC G AAGGG CAC ACG GT CCT GG TAG AACT AAA ACC TCC CG CAG AA AT GT CC GG
 Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr
 2821 TCA CT CAT ATAG ATGCC CACT TT CTATCC CAG ACA AAG CAG AGT GGG GAG A ACCT C CTT
 AGT GAG TAT ATCT ACGG GT GAA AGA TAG GT CT GT CTC ACC C CTT GG AAGG AA
 Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp
 2881 ACTGGT AGCGT ACCAAGCC ACCGT GTGCCTAGGGCTCAAGCCC ACCCTCCATGGGCCAACACCCCTGC
 TG GACC AT CGC ATGGT CGGT GGCA CAC CGC ATCC GAGT TC GGG GAGGG TAG CACCC
 Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu
 2941 ACCAGAT GTGG AAGT GTT GATT CGC CT CAAG CCC ACC CT CCATGGGCC AACACCCCTGC
 TGGT CTACAC CTT CACAA ACTA AGCG GAGT CGGG TGGG AGGT ACC CGG TT GTGGG AC
 Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro Val Thr Lys Tyr Ile
 3001 TATACAGACTGGGCGCTGTT CAGA ATGAA ATCAC C C T GAC GC ACC CAG T CAC CAA ATACA
 ATAT GT CTG ACC CCGC GACA AGT CTT ACT T TAG TGG GACT GCG TGGG TCA GTGG T TAT GT
 Met Thr Cys Met Ser Ala Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly
 3061 TCATGACATGC ATGT CGG CGC GAC CTGG AGGT CGT CAC GAG CAC TGGG TGCT CGT GGCG
 AGT ACT GTAC GTAC AGCC CGC TGG ACCT CCAG CAGT GCT CGT GG GACCC AC GAG CA ACC CG
 Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg
 3121 GCGT CCTGG CTGCTT GGCG CGT ATT GCG CTG TCA ACAGG CTG CGT GGT CATAG TGGG CA
 CGC AGG ACC GAC GAA ACC CGG CGC ATA AC GG AC AGT TGT CGC GAC GC ACC AGT AT CAC CC GT
 Val Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe
 3181 GGGT CGT CTG TCC CGG AAG CCG GCA ATC ATAC CT GAC AGGG AAG T C C T ACC GAG AGT
 CCC AGC AGA CAGG C C T C G G C T T A G T AT GG ACT GT C C T C A G G A G A T GG C T C A
 Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala
 3241 TCGATGAGATGGAAGAGTGCTCTCAGCACCTACCGTACATCGAGCAAGGGATGATGCTCG
 AGCTACTCTACCTCTCACGAGAGTCGTGAATGGCATGTA GCTCGTCCCTACTACGAGC
 Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val
 3301 CCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCGAGACCGCGTCCGTCAAGG CAGAG
 GGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCC
 Ile Ala Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met
 3361 TTATCGCCCCCTGCTGTC CAG ACC AACTGG CAAA ACTC GAG ACCTCTGGGCGAAGCATA
 AATAGC GGGG GAC GAC AGGT CTGG TT GAC GTT T GAG CTCTGG AAG ACC CGC TT CGT AT
 Trp Asn Phe Ile Ser Gly Ile Glu Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro
 3421 TGTGGAACTTCATCAGTGGGATA CA AAT ACTTGGC GGG CTT GTCAACGCTGCCTGGTAACC
 ACACCTGAAGTAGTCACCTAT GTT ATGAACCGCCCGAACAGTTGCGACGGACCATTGG
 Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro Leu Thr Thr Ser Gln
 3481 CCGCCATTGCTTATTGATGGCTTTACAGCTGCTGTCAACCAGCCACTAACCAACTAGCC
 GCGGTAACGAAGTA ACT ACC GAAA ATGTCGACGACAGTGGT CGGG TGATTGGTGATCGG
 Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala
 3541 AAACCCCTCTCTTCAACATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCGGGT
 TTTGGGAGGAGAAGTTGTATAACCCCCCCCACCCACCGACGGGTCGAGCGGGCGGGCAC
 Ala Thr Ala Phe Val Gly Ala Gly Leu Ala Ala Ala Ile Gly Ser Val Gly Leu Gly
 3601 CC GCTACTGCC TTT GTGGCGCTGGCTTAGCTGGC GCGCCATGGCAGTGTGACTGG
 GCGATGACGGAAACACCGCGACCGAACATCGACCGCGGGTAGCCGTACAACCTGACC
 Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val Ala
 3661 GGAAGGT CCTCATAGACATCCTTGCAGGGTATGGCGGGCGTGGCGGGAGCTTTGTG
 CCTTCCAGGAGTATCTG TAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACC
 Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val Asn Leu Leu Pro Ala
 3721 CATTCAAGATCATGAGCGGTGAGGT CCCC TCCACGGAGGACCTGGTCAATCTACTGCCCG
 GTAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCCTCTGGACCAAGTTAGATGACGGGC

FIG. 32E

3781 IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
 CCATCCCTCGCCCCGGAGCCCTCGTAGTCGGCGTGGCTGTGCAGCAATACTGCGCCGGC
 GGTAGGAGAGCGGGCCCTGGGAGCATCAGCCGACCAGACACGTCGTTATGACGCGGCCG

 3841 ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
 ACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCCC
 TGCAACCGGGCCCCTCCCCGTCACGTACCTACTTGGCGACTATCGGAAGCGGGAGGG

 3901 GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
 GGGGAAACCATGTTCCCCCACGCACACTAGTGCAGGGAGAGCGATGCAGCTGCCCGTCA
 CCCCCCTGGTACAAAGGGGTGCGTGATGCACGGCCTCGCTACGTCGACGGCGCAGT

 3961 AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
 CTGCCATACTCAGCAGCCTCACTGTAACCCAGCTCCTGAGGCAGTCACCCAGTGGATAA
 GACGGTATGAGTCGTCGGAGTACATTGGTCGAGGACTCCGCTGACGTGGTCACCTATT

 4021 SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
 GCTCGGAGTGTACCACTCCATGCTCCGGTCTGGCTAACGGACATCTGGGACTGGATAT
 CGAGCCTCACATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGAGTACGGTGTGACGGAC

 4081 GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
 GCGAGGTGTGAGCGACTTTAACCTGGCTAAAGCTAACGGCTAGTCATGCCACAGCTGCC
 CGCTCCACAACTCGCTGAAATTCTGGACCGATTTCGATTGAGTACGGTGTGACGGAC

 4141 IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
 GGATCCCCTTGTCCTGCCAGCGCGGGTATAAGGGGGCTGGCAGTGGACGGCATCA
 CCTAGGGGAAACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCACCTGCCGTAGT

 4201 HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
 TGCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGA
 ACGTGTGAGCGACGGTGACACCTGACTCTAGTACCTGTACAGTTTGCCCTGCTACT

 4261 IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
 GGATCGCGTCCCTAGGACCTGCAGGAACATGTGGAGTGGACCTTCCCATTAAATGCC
 CCTAGCAGCCAGGATCCTGGACGTCCTGTACACCTCACCTGGAAGGGTAATTACGGA

 4321 ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
 ACACCACGGGCCCTGTACCCCCCTTCCTGCGCCGAACATACAGTTCGCGCTATGGAGGG
 TGTGGTGCCCCGGGACATGGGGGAAGGACGCGGCTTGATGTGCAAGCGCGATACTCCC

 4381 SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
 TGTCTGCAGAGGAATATGTGGAGATAAGGCAGGTGGGGACTTCAACTACGTGACGGGTA
 ACAGACGTCTCCTTACACCTTACCGTCCACCCCTGAAGGTGATGCACTGCCCAT

 4441 ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGluLeu
 TGACTACTGACAATCTCAAATGCCGTGCCAGGTCCCATGCCGAATTTCACAGAAAT
 ACTGATGACTGTTAGAGTTACGGGCACGGTCCAGGGTAGCGGGCTAAAAAGTGTCTTA

 4501 AspGlyValArgLeuHisArgPheAlaProProCysLysProLeuLeuArgGluGluVal
 TGGAACGGGGTGCCTACATAGGTTGCGCCCCCTGCAAGCCCTGCTGCCGGAGGGAGG
 ACCTGCCCCACGCGGATGTATCCAACAGCGGGGGACGTTGGAAACGACGCCCTCCTCC

 4561 SerPheArgValGlyLeuHisGluTyrProValGlySerGlnLeuProCysGluProGlu
 TATCATTCAAGAGTAGGACTCCACGAATACCCGGTAGGGTCGCAATTACCTTGCAGCCCG
 ATAGTAAGTCTCATCCTGAGGTGCTTATGGGCCATCCCAGCGTTAATGGAACGCTCGGC

 4621 ProAspValAlaValLeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAla
 AACCGGACGTGGCGTGTGACGCCATGCTCACTGATCCCTCCATATAACAGCAGAGG
 TTGGCCTGCACCGGACAACACTGCAGGTACGAGTACTAGGGAGGGTATATTGTCGTC

 4681 AlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSerSerAlaSerGln
 CGGCCGGCGAAGGTTGGCGAGGGGATCACCCCCCTGTGGCCAGCTCCTCGGCTAGCC
 GCCGGCCCGCTCCAACCGCTCCCTAGTGGGGGGAGACACCGGTCGAGGAGGCCGATCGG

 4741 LeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGlu
 AGCTATCCGCTCCATCTCAAGGCAACTTGACCCGCTAACCATGACTCCCTGATGCTG
 TCGATAGGCAGGTAGAGAGTTCCGTTGAACGTTGGGACTACGAC

FIG. 32F

LeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGlu
4801 AGCTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGGCAGCAACATCACCAAGGGTTG
TCGAGTATCTCCGGTGGAGGATAACCTCCGTCTCACCGCCGTTGTAGTGGTCCCAAC

SerGluAsnLysValValIleLeuAspSerPheAspProLeuValAlaGluGluAspGlu
4861 AGTCAGAAAACAAAGTGGTGATTCTGGACTCCTCGATCCGCTTGTGGCGGAGGAGGAGC
TCAGTCTTTGTTCAACCCTAAGACCTGAGGAAGCTAGGCAGACACCAGCCTCTAACGGGGTCCGG

ArgGluIleSerValProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeu
4921 AGCGGGAGATCTCGTACCCGAGAAATCCTGCGGAAGTCTCGGAGATTGCCCCAGGCC
TCGCCCCCTAGAGGCATGGCGCTTTAGGACGCCTCAGAGCCTCTAACGGGGTCCGG

ProValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAsp
4981 TGCCCCTGGCGCGGCCGGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAGCCCG
ACGGGCAAACCCGCGCCGGCCTGATATTGGGGGGCGATCACCTCTGACCTTTTGGGC

TyrGluProProValValHisGlyCysProLeuProProLysSerProProValPro
5041 ACTACGAACCACCTGTGGTCCATGGCTGTCGCTCCACCTCCAAAGTCCCCTCTGTGC
TGATGCTTGGTGGACACCAGGTACCGACAGGCGAAGGTGGAGGTTTCAAGGGGAGGACACG

ProProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAla
5101 CTCCGCCTCGGAAGAACGGACGGTGGCTCTCACTGAATCAACCTATCTACTGCCTTGG
GAGGCGGAGCCTCTCGCCTGCCACCAGGAGTGACTTAGTTGGGATAGATGACGGAAACC

GluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThr
5161 CCGAGCTGCCACCAGAACGCTTGGCAGCTCCTCAACTTCCGGCATTACGGGCACAAATA
GGCTCGAGCGGTGGCTTCGAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTAT

ThrThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyr
5221 CGACAACATCCTCTGAGCCCGCCCTTCTGGCTGCCCGGACTCCGACGCTGAGTCCT
GCTGTTGTAGGAGACTGGGGGGAGACCTCCCCCTCGGACCCCTAGGCCTAGAACGCTGCCAGTA

SerSerMetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTyr
5281 ATTCCCTCCATGCCCGCCCTGGAGGGGGAGGCTGGGATCCGGATCTTAGCGACGGTCAT
TAAGGAGGTACGGGGGGACCTCCCCCTCGGACCCCTAGGCCTAGAACGCTGCCAGTA

SerThrValSerSerGluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSer
5341 GGTCAACGGTCAGTAGTGAGGCCAACCGGGAGGATGTCGTGCTGCTCAATGTCTTACT
CCAGTTGCCAGTCATCACTCCGGTTGCGCCTCACAGCACACGAGTTACAGAACGAAATGA

TrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAla
5401 CTTGGACAGGCGCACTCGTCACCCCGTGCAGCGGGAGAACAGAAACTGCCATCAATG
GAACCTGTCCCGTGAGCAGTGGGACCGCAGCTTGTCTTTGACGGTAGTTAC

LeuSerAsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAla
5461 CACTAAGCAACTCGTTGCTACGTACCCACAATTGGGTGATTCCACCACTCACGCACTG
GTGATTGTTGAGCAACGATGCACTGGTAAACACATAAGGTGGAGTGCCTAC

CysGlnArgGlnLysLysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGln
5521 CTTGCCAAAGGCAGAACGAAAGTCACATTGACAGACTGCAAGTCTGGACAGCCATTAC
GAACGGTTCCGTCTTCAGTGTAAACTGTCAGTTCAAGACCTGTCGGTAATGG

AspValLeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerVal
5581 AGGACGTACTCAAGGAGGTTAAAGCAGCAGCGTCAAAAGTGAAGGCTAACCTGCTATCCG
TCCTGCATGAGTTCTCCAATTGTCGCGCAGTTTCACTTCCGATTGAAACGATAGGC

GluGluAlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAla
5641 TAGAGGAAGCTTGCAGCCTGACGCCCCCACAATCAGCCAAATCAAGTTGGTTATGGGG
ATCTCCTTCGAACGTCGGACTGCAGGGTTAGGTTCAAACCAATACCC

LysAspValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAsp
5701 CAAAAGACGTCCGTTGCCATGCCAGAACGCGTAACCCACATCAACTCCGTGTGGAAAG
GTTTCTGCAGGCAACGGTACGGTCTTCCGGCATTGGGTAGTTGAGGGCACACCTTC

LeuLeuGluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPhe
5761 ACCTTCTGAAAGACAATGTAACACCAATAGACACTACCATGGCTAAGAACGAGGTTT
TGGAAAGACCTTCTGTTACATTGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAA

FIG. 32G

CysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeu
5821 TCTCGTTCAGCCTGAGAAGGGGGTCGTAAAGCCAGCTCGTCATCGTTCCCCGATC
AGACGCAAGTCGGACTCTTCCCCCAGCATCGTCAGCAGAGTAGCACAAGGGCTAG
GlyValArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAla
5881 TGGGCCTGCGCGTGTGCGAAAAGATGGCTTGACGACGTGGTTACAAAGCTCCCCTGG
ACCCGACCGCCACACGCTTTCTACCGAAACATGCTGCACCAATGTTGAGGGGAACC
ValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuVal
5941 CCGTATGGAAAGCTCTACGGATTCCAATACTCACCAAGGACAGCGGGTTGAATTCTCG
GGCACTACCCCTCGAGGATGCCATAAGGTTATGAGTGGTCTGTCGCCAACCTAACAGGAGC
GlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAsp
6001 TGCAAGCGTGGAAAGTCCAAGAAAACCCCAATGGGGTCTCGTATGATACCGCTGCTTG
ACGTTCGCACCTCAGGTTCTTGGGTTACCCCAAGAGCATACTATGGCGACGAAAC
SerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeu
6061 ACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAACTACCAATGTTGTGACC
TGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCCTCCGTTAGATGGTTACAACACTGG
AspProGlnAlaArgValAlaIleLysSerLueThrGluArgLeuTyrValGlyGlyPro
6121 TCGACCCCCAAGCCCGCTGGCATCAAGTCCCTACCGAGAGGGCTTATGTTGGGGGCC
AGCTGGGGGTTCGGGCGACCGGTAGTCAGGGAGTGGCTCTCCGAAATACAACCCCCGG
LeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeu
6181 CTCTTACCAATTCAAGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGAGCGCGTAC
GAGAATGGTTAACGCCCCCTTGACGCCGATAGCGTCCACGGCGCGCTGCCGCATG
ThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAla
6241 TGACAACTAGCTGTGTAACACCCCTCACTGCTACATCAAGGCCGGCAGCCGTGAG
ACTGTTGATCGACACCATTGTGGGAGTGAACGATGTAGTCCGGCCGTCGGACAGCTC
AlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGlu
6301 CGCGAGGGCTCCAGGACTGCACCATGCTCGTGTGGCGACGACTTAGTCGTTATCTGTG
GGCGTCCCAGGTCTGACGTGGTACGAGCACACACCCTGCTGAATCAGCAATAGACAC
SerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArg
6361 AAAGCGCGGGGTCCAGGAGGACCGCGAGCCTGAGAGCCTCACGGAGGCTATGACCA
TTTCGCGCCCCCAGGTCTCTGCGCCGCTCGGACTCTCGGAAGTGCCTCCGATACTGGT
TyrSerAlaProProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSer
6421 GGTACTCCGCCCCCTGGGGACCCCCCAACAGAAATCGACTGGAGCTCATAACAT
CCATGAGGGGGGGGGACCCCTGGGGGGTGTGGCTTATGCTAACCTCGAGTATTGTA
CysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThr
6481 CATGCTCCTCCAACGTGTCAGTCGCCACGACGGCGCTGGAAAGAGGGTCTACTACCTCA
GTACGAGGAGGTTGCACAGTCAGCGGGTGTGCCGCGACCTTCTCCAGATGATGGAGT
ArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProVal
6541 CCCGTGACCCCTACAACCCCCCTCGCGAGAGCTCGTGGGAGACAGCAAGACACACTCCAG
GGGCACTGGATGTTGGGGAGCGCTCGACGCACCCCTGTCGTTCTGTGAGGTC
AsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeu
6601 TCAATTCTGGCTAGGCAACATAATCATGTTGCCACACTGTGGCGAGGATGATAC
AGTTAAGGACCGATCGTTGATTAGTACAAACGGGGTGTGACACCCGCTCTACTATG
MetThrHisPhePheSerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCys
6661 TGATGACCCATTCTTACGGCTCCTATAGCCAGGGACAGCTGAACAGGCCCTCGATT
ACTACTGGTAAAGAAATCGCAGGAATATCGGTCCCTGGTCGAACTTGTCCGGAGCTAA
GluIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuProProIleIleGlnArg
6721 GCGAGATCTACGGGGCTGCTACTCCATAGAACCACTTGATCTACCTCCATCATTCAA
CGCTCTAGATGCCCGGACGATGAGGTATCTGGTGAACTAGATGGAGGTTAGTAAGTT
Leu
6781 GACTC
CTGAG

FIG. 33

Lane Number	Chimp Reference Number	Infection Type	Sample date (days) (0=inoculation day)	ALT (alanine aminotransferase level in sera) μU/ml
1	1	NANB	0	0
2	1	NANB	76	71
3	1	NANB	118	19
4	1	NANB	154	N/A
5	2	NANB	0	0
6	2	NANB	21	52
7	2	NANB	73	13
8	2	NANB	138	N/A
9	3	NANB	0	8
10	3	NANB	43	205
11	3	NANB	53	14
12	3	NANB	159	6
13	4	NANB	-3	11
14	4	NANB	55	132
15	4	NANB	83	N/A
16	4	NANB	140	N/A
17	5	HAV	0	4
18	5	HAV	25	147
19	5	HAV	40	18
20	5	HAV	268	5
21	6	HAV	-8	N/A
22	6	HAV	15	100
23	6	HAV	41	10
24	6	HAV	129	N/A
26	7	HAV	0	7
27	7	HAV	22	83
28	7	HAV	115	5
29	7	HAV	139	N/A
30	8	HAV	0	15
31	8	HAV	26	130
32	8	HAV	74	8
33	8	HAV	205	5
34	9	HBV	-290	N/A
35	9	HBV	379	9
36	9	HBV	435	6
37	10	HBV	0	8
38	10	HBV	111-118 (pool)	96-156 (pool)
39	10	HBV	205	9
40	10	HBV	240	13
41	11	HBV	0	11
42	11	HBV	28-56 (pool)	8-100 (pool)
43	11	HBV	169	9
44	11	HBV	223	10

FIG. 33A

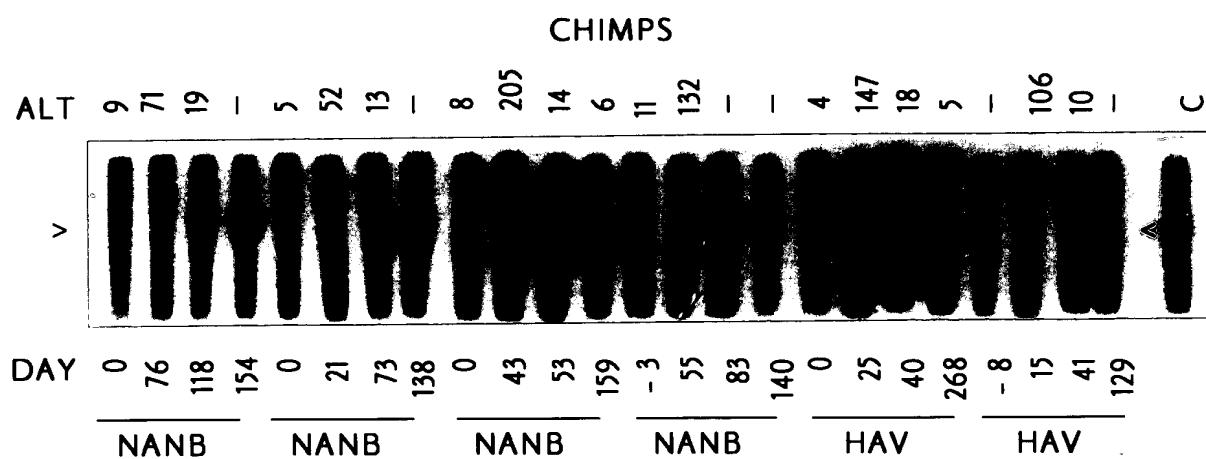


FIG. 33B

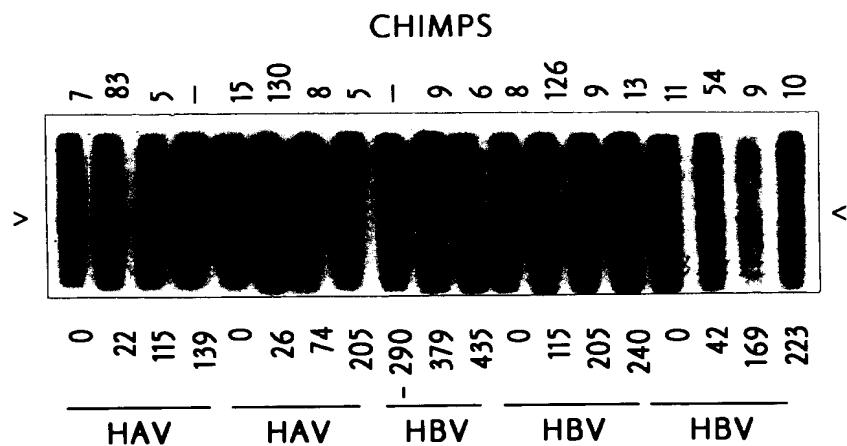


FIG. 34

Lane Number	Patient Reference Number	Diagnosis	ALT Level (μ /ml)
1	11	NANB	1354
2	11	NANB	31
3	21	NANB	14
4	21	NANB	79
5	21	NANB	26
6	31	NANB	78
7	31	NANB	87
8	31	NANB	25
9	41	NANB	60
10	41	NANB	13
11	51	NANB	298
12	51	NANB	101
13	61	NANB	474
14	61	NANB	318
15	71	NANB	20
16	71	NANB	163
17	81	NANB	44
18	81	NANB	50
19	9	NANB	N/A
20	10	NANB	N/A
21	11	NANB	N/A
22	12	Normal	N/A
23	13	Normal	N/A
24	14	Normal	N/A
26	30174	Normal	N/A
27	30105	Normal	N/A
28	30072	Normal	N/A
29	30026	Normal	N/A
30	30146	Normal	N/A
31	30250	Normal	N/A
32	30071	Normal	N/A
33	15	AcuteHAV	N/A
34	16	AcuteHAV	N/A
35	17	AcuteHAV	N/A
36	18	AcuteHAV	N/A
37	48088	AcuteHAV	N/A
38	47288	AcuteHAV	N/A
39	47050	AcuteHAV	N/A
40	46997	AcuteHAV	N/A
41	19	Convalescent HBV (anti-HBSag+ve; anti-HBCag+ve)	N/A
42	20	(anti-HBSag+ve; anti-HBCag+ve)	N/A
43	21	(anti-HBSag+ve; anti-HBCag+ve)	N/A
44	22	(anti-HBSag+ve; anti-HBCag+ve)	N/A
45	23	(anti-HBSag+ve; anti-HBCag+ve)	N/A
46	24	(anti-HBSag+ve; anti-HBCag+ve)	N/A
47	25	(anti-HBSag+ve; anti-HBCag+ve)	N/A
48	26	(anti-HBSag+ve; anti-HBCag+ve)	N/A
49	27	(anti-HBSag+ve; anti-HBCag+ve)	N/A

¹Sequential serum samples were assayed from these patients

FIG. 34A

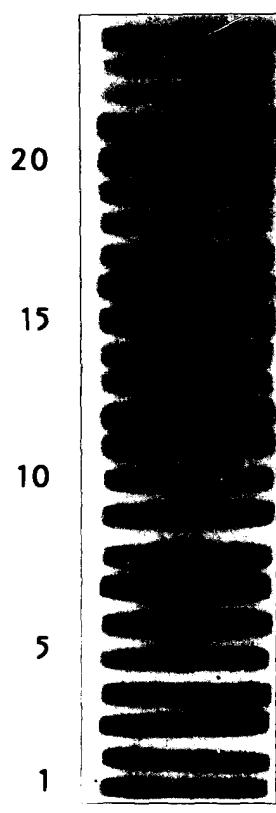


FIG. 34B

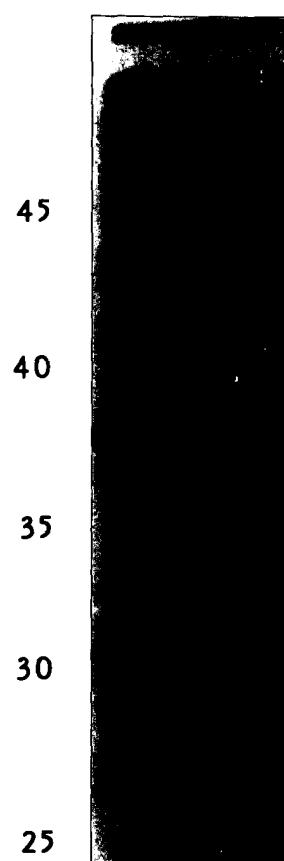


FIG. 35

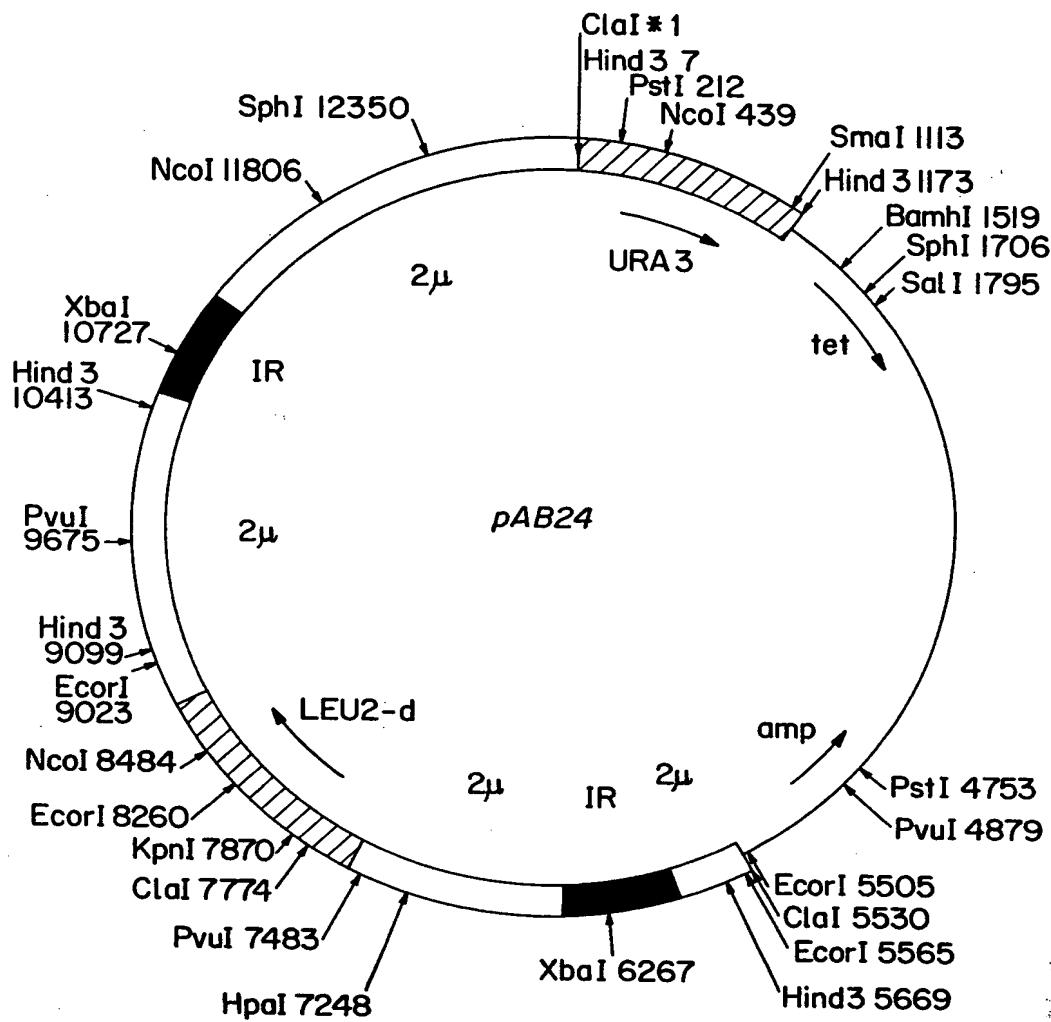


FIG. 36A

-----SOD-----COOH][--adaptor---][NANBH polypeptide]
 1 AlaCysGlyValIleGlyIleAlaGlnAsnLeuGlyIleArgAspAlaHisPheLeuSer
 GCTTGTGGTGTAAATTGGGATGCCAGAATTGGGAATTGGGATGCCACTTCTATCC
 CGAACACCACATTAAACCCTAGCGGGTCTAAACCCTAACGGGTGAAAGATAAGG
 >>>>>>>>>>>>
 61 GlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
 CAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTGC
 GTCTGTTTCGTCACCCCTCTTGGAGGAATGGACCATCGCATGGTTGGTGGCACACG
 121 AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
 GCTAGGGCTCAAGCCCCCTCCCCATCGGGGACCAGATGTGGAAAGTGTGTTGATTGCCCTC
 CGATCCCAGTCGGGGAGGGGGTAGCACCTGGTCTACACCTTCACAAACTAACGGGAG
 181 LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
 AAGCCCACCCCTCCATGGCCAACACCCCCTGCTATACAGACTGGGCGCTGTTAGAAATGAA
 TTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCCGCGACAAGTCTACTT
 241 IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
 ATCACCTGACGCACCCAGTCACAAATACATCATGACATGTCGGCCGACCTGGAG
 TAGTGGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACGTACAGCCGGCTGGACCTC
 301 ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCys
 GTCGTCACGAGCACCTGGGTGCTCGTGGCGCGTCTGGCTGCTTGGCCGCGTATTGC
 CAGCAGTGCCTGACGACCGAGCAACCGCCGCAGGACCGACGAAACAGGCCCTCGGCCGTTAG
 361 LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
 CTGTCACACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTTGCTCCGGGAAGCCGGCAATC
 GACAGTTGTCGACGACCGAGTATCACCGTCCCAGCAGAACAGGCCCTCGGCCGTTAG
 421 IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
 ATACCTGACAGGGAAAGTCTCTACCGAGAGTTCGATGAGATGAAAGAGTGTCTCAGCAC
 TATGGACTGTCCTTCAGGAGATGGCTCTCAAGCTACTCACCGTACGAGAGTCGTTG
 481 LeuProTyrIleGluglnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
 TTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAACGCCCTCGGC
 AATGGCATGAGCTCGTCCCTACTACGAGCGGCTCGTAAGTCGTTCCGGGAGCCG
 541 LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrp
 CTCCCTGAGACCGCGTCCCGTCAGGAGGGTTATCGCCCTGCTGTCAGAACCAACTGG
 GAGGACGTCTGGCGCAGGGCAGTCCGTCCTCAAATAGCGGGGACGACAGGTCTGGTTGACC
 601 GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyr
 CAAAAACTCGAGACCTCTGGGCGAAGCATATGTGGAACTTCATCGTGGGATACAATAC
 GTTTTGAGCTCTGGAAAGACCCGCTTCGTATACACCTTGAAAGTAGTCACCTATGTTATG
 661 LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
 TTGGCGGGCTTGTCAACGCTGCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTACA
 AACCGCCCCAACAGTTGCGACGGACCATTGGGCGGTAACGAAGTAACACCGAAAATGT
 721 AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
 GCTGCTGTCACCAAGCCCCACTAACCAACTAGCCAAACCCCTCCTTCAACATATTGGGGGGGG
 CGACGACAGTGGTCGGGTGATTGGTATCGGTTGGGAGGAGAAGTTGATAACCCCCCCC
 781 TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
 TGGGTGGCTGCCAGCTGCCGCCCCCGGTGCGCGTACTGCCTTGTGGCGCTGGCTTA
 ACCCACCGACGGGTCGAGCGGGGGCACGGCGATGACGGAAACACCCCGGACCGAAT

FIG. 36B

AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
841 GCTGGCGCCGCCATCGGCAGTGTGGACTGGGAAGGTCTCATAGACATCCTGCAGGG
CGACCGCGGCGGTAGCCGTACAACCTGACCCCTTCCAGGAGTATCTGAGAACGTC
TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
901 TATGGCGCGGGCGTGGCGGGAGCTTGTGGATTCAAGATCATGAGCGGTGAGGTCCCC
ATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTGCCACTCCAGGG
SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
961 TCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCCGGAGGCCCTCGTAGTC
AGGTGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCAGGGCTCGGGAGCATCAG
GlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGln
1021 GGC GTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAG
CCGCACCAAGACACGTCGTTATGACGCCCGTGCACCGGGCCGCTCCCCGTCACGTC
<<<<<<<<<< NANBH] [---extra
TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProValHisHis
1081 TGGATGAACCGGCTGATAGCCTTCGCCTCCGGGGAAACCATGTTCCCCAGTCCCATCAT
ACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGTCAGGTAGTA
-----]
LysArgOP
1141 AAGCGTTGACGCTCCCTACGGGTGGACTGTGGAGAGACAGGGCACTGCTAAGGCCAAAT
TTCGCAACTGCGAGGGATGCCACCTGACACCTCTGTCCCGTGACGATTCCGGGTTA
1201 CTCAGCCATGCATCGAGGGGTACAATCGTATGGCCAACAACACTAGCGCTACGTAAGTC
GAGTCGGTACGTAGCTCCCATGTTAGGCATACCGGTTGTTGATCGCGCATGCATTCA
1261 TCCTTCTCGATGGTCCATACCTTAGATGCGTTAGCATTAAATCCGAATT
AGGAAAAGAGCTACCAGGTATGGAATCTACGCAATCGTAATTAGGCTTAAG

FIG. 37A

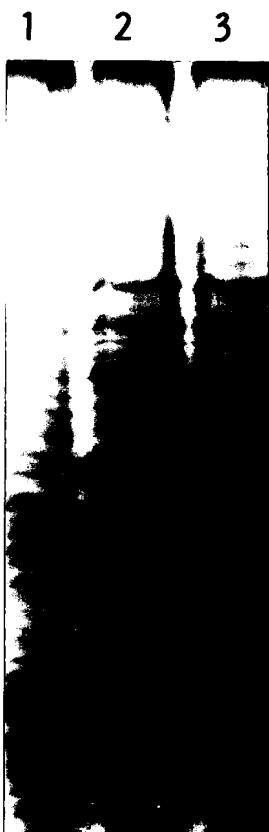


FIG. 37B

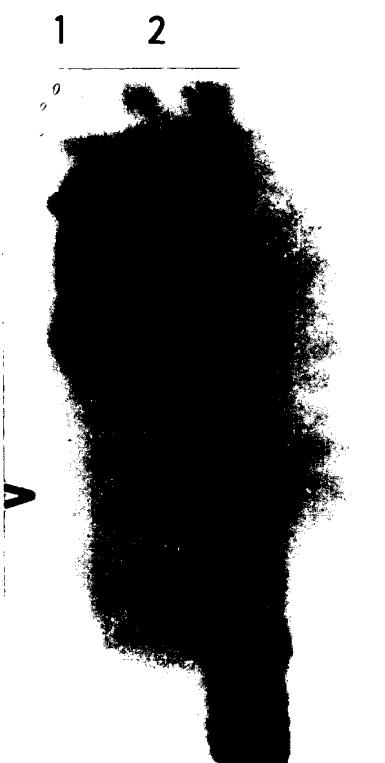


FIG. 38

1 2 3 4

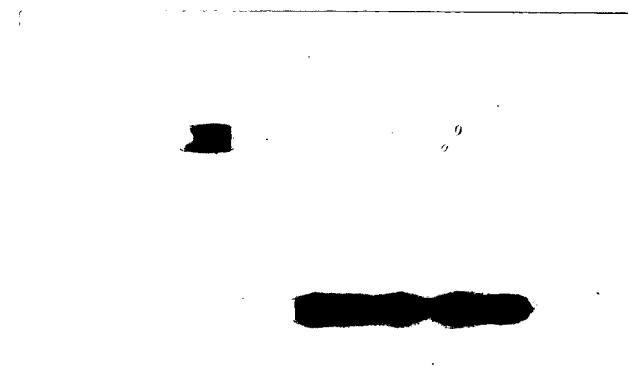


FIG. 40

1 2 3 4

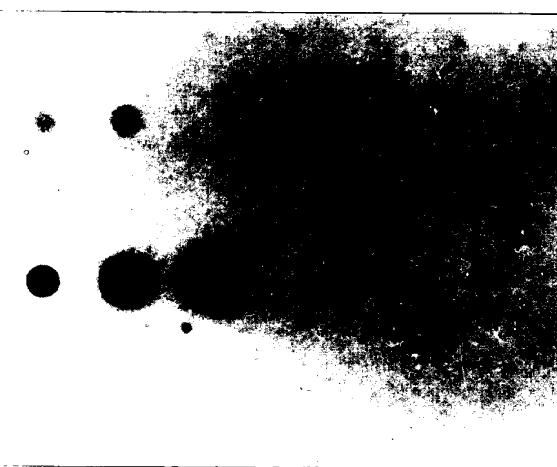


FIG. 39



FIG. 41A

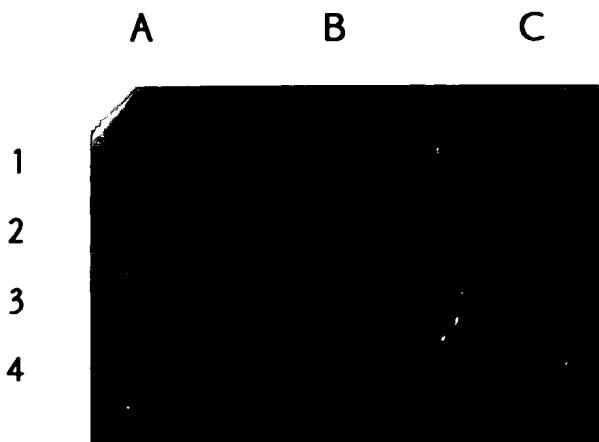
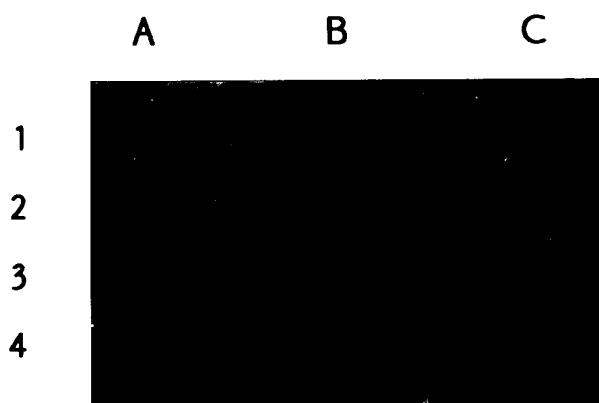


FIG. 41B



1
2
3
4

FIG. 42A

HCV	10	20	30	40	50	
	EYVLLFLLLADARVCSC	LWMMLLISQA	EALENLVILNAASLAGTHGLVSFLVFFCFA			
MNWVD1	AVSFVTLITGNMSFRDLGRVMVMVGATMTDDIGMGVTY	LALLAAFKVRPTFAAGLLLRLK				
	130	140	150	160	170	180
HCV	60	70	80	90	100	110
	WYLKGKWVPGAVYT	FYGMWP	LLLLLPQRAYALDTEVAASC	GGVVLVGLMALT	SPYY	
MNWVD1	TSKELMMTTIGIVLLSQSTIPE	TILELTDALALGMMVLKMVRKMEKYQLAVT	MAILCVP			
	190	200	210	220	230	240
HCV	120	130	140	150	160	170
	KRYISWC	LWWLQYFLTRVEAQLH	WIPPLNVRRGD	VILLMC	AVHPTLVFDITK	LAV
MNWVD1	NAVILQNAWKVSCT	I	LAVVSVSPLFL	TSQQKADWIPL	ALT	IKGLNPTAIF-LT
	250	260	270	280	290	
HCV	180	190	200	210	220	230
	FGPLWILQASLLKVPYF	-VRVQGLLRF-CALARKM	IGGHYVQMVI	I	KLGALTGT	VYNHL
MNWVD1	KKRSWPLNEAI	MAVGMVSIL	ASSLLKNDI	PMTGPLVAGGL	LT	GRSADLE
	300	310	320	330	340	350
HCV	240	250	260	270	280	290
	TPLRDWAHNGLRDLAV	AVEPVVFSQ	METKLITWGADTAAC	GDIINGLPV	SARRGRE	ILLG
MNWVD1	ADVK-WEDQAEI	SGSSPILSITI	SE-DGSM	SIKNEEEQTL	IRTG	LVSG--LFP
	360	370	380	390	400	410
HCV	300	310	320	330	340	350
	PADGMVSKGWRL	LAPITAYAQQT	RGLLGCIITS	LTGRDKNQ	VEGEVQIV	STAATFLATC
MNWVD1	VSIPI	AAWYLWEVK	KQRAGVLWDVPSPPP	VGKAEL	EDGAYRIKQKG	I
	420	430	440	450	460	470
HCV	360	370	380	390	400	410
	INGVCWT	VHGAGTRTI	ASPKGPVI	QMYTNVDQDLV	---	GWPAPQGSRSLTPCTCGSSD
MNWVD1	KEGT	FHTMWHVTRGA	VLMHKGKR	IEPSWADVKDL	VSCGGGWKLEG	EWKEGEEVQVLALE
	480	490	500	510	520	530
HCV	420	430	440	450	460	470
	LYLVTRHADV	IPVRRRGDSRGS	LLSPRPISY	LKGSSGGPLLCPA	HAVGIFRAAV	CTRV
MNWVD1	PGKNPRAV	QT	KPGLFKTN	-AGTIGAV	SLDFSPGTSGSP	IIDKKGKVVG
	540	550	560	570	580	590

FIG. 42B

HCV	480	490	500	510	520	530
MNWVD1	AKAVDFIPVENLETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTGSGKS--TKVPAAYAAQ					
	ÄYVSÄIAQTEK--SIEDNPEIÉDDIFRK---RKLTIMDLHPGÄGKTÄRYLPÄIVRGAIKR					
	600	610	620	630	640	
HCV	540	550	560	570	580	
MNWVD1	GYKVVLNLNP--VAATLGFGAYMSKAHGIDPNIRTGVRTITGSPITYSTYGKFLADGGC					
	GLRTLILAPTRVVAÄEMEEÄLRLGLPIRYQTTPÄIRÄEHTGREIVDLMCHÄTFTMRLL-SPV					
	650	660	670	680	690	700
HCV	590	600	610	620	630	640
MNWVD1	XSGGAYDIIICDECHSTDATSI	LGIGTVLDQAETAGARLVVLATATPPGSVTVPHPNIEEV				
	RVPNYNLIMDÉAHFTDPÄSIAÄRGYISTRVE-MGÉAAGIFMTATPPGSRD-PFPQSNA					
	710	720	730	740	750	760
HCV	650	660	670	680	690	700
MNWVD1	ALSTTGEIPFYGKAIPLEVIKGGRHLIFCHSKKKCDELAALKVALGINAVAYYRGLDVSV					
	IMDÉERÉIPERSWSSGHEWVTDFKGKTVWFVPSIKAGNDTAACLRKNGKKVTQLSRKTFD					
	770	780	790	800	810	820
HCV	710	720	730	740	750	760
MNWVD1	IPTSGDVVVVATDALMTGYTGDFDSVIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRT					
	SEYVKTRTNWDNFVVTTDISEMGANFKAERVIDPRRCMKPVILTDGEERVILAGPMPVTH					
	830	840	850	860	870	880
HCV	770	780	790	800	810	820
MNWVD1	QRRGRTGRGKPGIYRFVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNT					
	SS					

FIG. 43

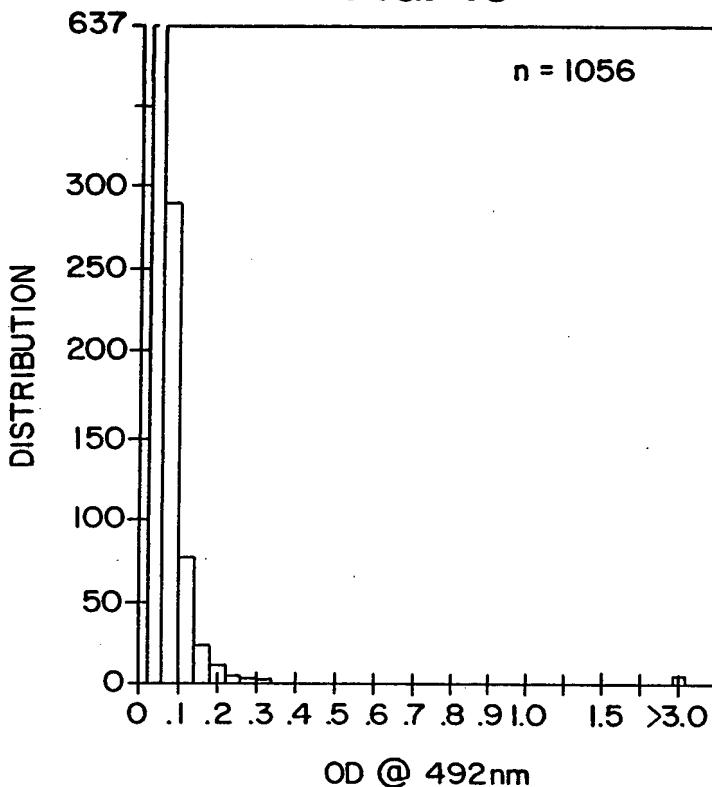


FIG. 44

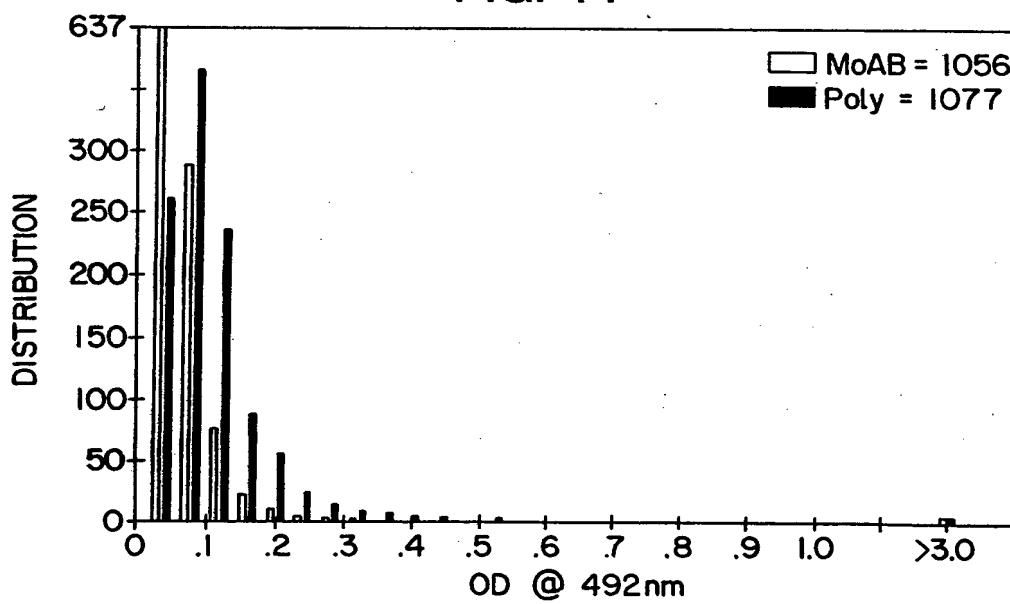


FIG. 45

<u>Name</u>	<u>Common Sequence</u>	<u>Variable Sequence</u>
5'-3-1	AAGCTTGATCGAATT	CGATCTTGC
-2		CGATCCTGC
-3		CGATCATGC
-4		CGATCGTGC
-5		CGAAAGTTGC
-6		CGAAAGCTGC
-7		AGATCTTGC
-8		AGATCCTGC
-9		AGATCATGC
-10		AGATCGTGC
-11		AGAAGTTGC
-12		AGAAGCTGC
-13		CGATCTTGT
-14		CGATCCTGT
-15		CGATCATGT
-16		CGATCGTGT
-17		CGAAAGTTGT
-18		CGAAAGCTGT
-19		AGATCTTGT
-20		AGATCCTGT
-21		AGATCATGT
-22		AGATCGTGT
-23		AGAAGTTGT
-24		AGAAGCTGT
-25		CGCTCTTGC
-26		CGCTCCTGC
-27		CGCTCATGC
-28		CGCTCGTGC
-29		CGCAGTTGC
-30		CGCAGCTGC
-31		CGCTCTTGT
-32		CGCTCCTGT
-33		CGCTCATGT
-34		CGCTCGTGT
-35		CGCAGTTGT
-36		CGCAGCTGT

FIG. 46A

GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
1 CAGGCTGTCCCTGAGGGCTAGCCAGCTGCCGACCCCTTACCGATTTCGACCAAGGGCTGGG
GTCCGACAGGACTCTCCGATGGTGACGGCTGGAAATGGCTAAAACGGTCCCCGACCC

ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrcysteineHistTyPro
61 GCCCTATCAGTTATGCCAACCGGAAGCGGGCCCCGACCAGCGCCCCCTACTGCTGGCACTACC
CGGGATAAGTCAAATACGGTTGCCTTGCCTGGCTGGTGGGGATGACGACCGTGTGATGG

ProLysProCysGlyIleValProAlaLysSerValCysGlyProvalTyrcysPheThr
121 CCCAAACCTTGGTATTGTGCCGGTAAACACGGCCATTAACACGGGGCTCTCACACACACCAGGCAATAACCGMACT
GGGGTTTGGAACGCCATTAACACGGCCATTAACACGGGGCTCTCACACACACCAGGCAATAACCGMACT

ProSerProValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
181 CTCCCAGCCCCGGTGGTGGAACGACCGAACGGTGGGGCCACCTAACGGCTGGG
GAGGGTCCGGGACCAACCACCCCTTGCTGGTCCAGGCCAGGGTGGATGTCGACCC

GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
241 GTGAAATGATAACGGACGTCTCGTCCTTAACAATAACAGGCCACGGCTGGCAATTGGT
CACTTTACTATGCCCTGAGAAGCAGGAATTGGTTATGGTCGGTGGCGACCCGGTTAACCA

GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
301 TCGGTTGTACCTGGATGAACCTCAACTGGATTCAACGGTGGAGCGGCCCTCCTGTG
AGCCAACATGGACCTACTTGAGTTGACCTAACAGTGGTTCACACGGCTTCACACGGGAGAACAC

FIG. 46B

IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysIlePro
361 TCATGGAGGGGGGGCAACAAACACCCCTGCACTGCCCAACTGATTGCTTCCGCAAGCATC
AGTAGGCCCTCCCCGGCGTTGTGGGACGTGACGGGTGACTAACGAAGGCCGTTCTGTAG

AspAlaThrTyrSerArgCysGlySerglyProTrpIleThrProArgCysLeuValAsp
421 CGGACGCCACATACTCTGGTGGCTCCGGTCCCTGGATCACACCCCAGGTGCGCTGGTCG
GCCTGGCGGTATAGAGGCCACGGGACCTAGTGTGGTCCACGGGACCCAGC

TyrProTyArgLeuTrpHisTyrProCysthrIleAsnTyrThrIlePheLysIleArg
481 ACTACCCGTATAGGCTTGGCATTTATCCTGTACCATCAACTACACTATTTAAATCA
TGATGGCATATCCGAAACCGTAATAAGAACATGGTAGTTGATGTGATAAATTTTAGT

MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
541 GGATGTACGTGGGAGGGGTGAGCACAAGGCTGGAAAGCTGCCACTGGACCCGGCG
CCTACATGCACCCCTCCCCAGCTCGTGTCCGACCTTCGACGGACGTTGACCTGGCCCGC

ArgCysAspLeuGluAspArgSerGluLeuSerProLeuLeuSerProAlaLeuSerThrGlyLeuIle
601 AACGTTGGCGATCTGGAAAGATAAGGACAGGTCCGAGCTCAGCCCCGTACTGCTGACCACTA
TTGCAAACGCTAGACCTTCTATCCCTGTCCAGGGCTCGAGTGGCAATGACGACTGGTGTAT

GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
661 CACAGTTGGCAGGTCCGGTGTCCATCACACCCCTGGCAAGCCTTGTCCACCCGGCTCA
GTGTCAACCGTCCAGGGCACAAAGGAAGTGTGGAACACGGTGGCCGAGT

FIG. 46C

Overlap with Combined ORF of DNAs 12f through 15e-----
HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
721 TCCACCTCCACCAAGAACATTGTGGACGTGCAGTAGTACTTGTAACCCCCAGTTCGTAGC
AGTTGGAGGTGGTCTTGTAAACACCTGCACGTCAATGAAACATGCCCAACCCCAGTTCGTAGC

SerTrpAlaIleLysTrpGluTyrValValLeuLeuLeuPheLeuLeuAlaAspAlaArg
781 CGTCCTGGCCATTAAAGTGGAGTACGTGGCTCCTGTTCTGCTTCTGCTTCCTGCTGCAGACGGCG
GCAGGACCCGGTAATTCAACCCCTCATGCAGCAGGAGACAAGGAAGACGAACGTC

ValCysSerCysLeuTrpMetMetLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
841 GCGTCTGCTCCTGCTTGTGGATGATGCTACTCATATCCCAAGGGAAAGCGGCTTTGGAGA
CGCAGACGGAGGACGAACACCTACTACGATGAGTATAAGGGTTGCCCTGCCGAAACCTCT

LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
901 ACCTCGTAATACTTAATGGAGCATCCCTGGGGACGGCACGGTCTGTATCCTTCCTCG
TGGAGCATTATGAAATTACGTGTAGGGACCGGGCTGGTGCAGAACATAGGAAGGGAGC

PhePheCysPheAlaIleTrpTyrLeuLysTrpValProGlyAlaValTyrrthrPhe
961 TGGTCTTCTGCTTGTGCTTGCATGGTATCTGAAGGGTAAGTGGGTGCCGGAGCGGTCTACACCT
ACAAGAACGAAACGTACCATAGACTTCCCATTACCCACGGGCCTCGCCAGATGTGGA

FIG. 46D

TyrglyMetTrpProLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
1021 TCTACGGGATGTGGCCTCTCCTGCTCCTGTTGGCGTGGCCAGGGTACGGC
AGATGCCCTAACCGGAGGGAGGACGAGGACAACCGCAACGGCATGGCG

AspThrGluValAlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThr
1081 TGGACACGGAGGTGGCCGGTGGCGGTGTTCTCGTGGGTTGATGGCGCTAA
ACCTGTGCCCTCACCGGCAGCACACGCCACAAACAAGGAGCAGCCAACTACCGCGATT

LeuSerProTyryTyryLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeu
1141 CTCTGTACCATATTACAAAGGGCTATATCAGCTGGCTTGTTCAAGTATTTC
GAGACAGTGGTATAATGGTTCGCCGATAATAGTCGACACCGAACACCACGAAGCTAAAG

ThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
1201 TGACCAAGTGGAAAGGCCAACTGCACGTGGATCCCCCTCAACGTCGGAGGGGG
ACTGGTCTCACCTTGCCTGACGTGCACACCTAACGACATGTGGCTGAGACCTAAAGGGGG
CGCTGCGCACAGTAGAATGAGTACACGACATGTGGCTGAGACCTAACGACATGTGGCT

AspAlaValIleLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
1261 GCGACCGCTGTCATCTTACTCATGTTGCTGACACCCGACTCTGGTATTGACATACCA
CGCTGCGCACAGTAGAATGAGTACACGACATGTGGCTGAGACCTAACGACATGTGGCT

LeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAla
1321 AATTGCTTGCGCTCTGGACCCCTTGGATTCCTCAAGCCAG
TTAACGACGACGGCAGAACCTAAGGAAGCTGGGATGGAAAGTTCGGTC

FIG. 47A

1 GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
 CAGGCTGTCCTGAGAGGCTAGCAGCTGCCGACCCCTTACCGATTTGACCAGGGCTGGG
 GTCCGACAGGACTCTCGATCGTCGACGGCTGGGAATGGCTAAAACGGTCCCACCC

 61 ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
 GCCCTATCAGTTATGCCAACGGAAGCGGGCCCCGACCAGCAGCCTACTGCTGGCACTACC
 CGGGATAGTCAATACGGTTGCCCTCGCCGGGCTGGTCGCGGGATGACGACCGTGATGG

 121 ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
 CCCCAAAACCTTGCCTGATTGTGCCCGAAGAGTGTGTGTGGTCCGGTATATTGCTTCA
 GGGGTTTGGAACGCCATAACACGGCGCTTCTCACACACACCAGGCCATAACGAAGT

 181 ProSerProValValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
 CTCCCAGCCCCGTGGTGGTGGGAACGACCGACAGGTCGGCGCCACCTACAGCTGGG
 GAGGGTCTGGGGCACCAACCCTTGCTGGCTGTCCAGCCCAGCGGGTGGATGTCGACCC

 241 GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
 GTGAAAATGATACGGACGTCTCGCCTAACAAATACCAGGCCACCGCTGGGCAATTGGT
 CACTTTACTATGCCCTGAGAACAGGAATTGTTATGGTCCGGTGGCACCCGTTAACCA

 301 GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
 TCGGTTGTACCTGGATGAACTCAACTGGATTCAACAAAGTGTGCGGAGCGCCCTCTTGTG
 AGCCAACATGGACCTACTTGAGTTGACCTAACGGTGGTTAACACGCCCTCGCGGAGGAACAC

 361 IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
 TCATCGGAGGGGGCGGGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCGCAAGCATC
 AGTAGCCTCCCCGCCCGTTGTGGACGTGACTAACGAAGGCGTTCTGAG

 421 AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
 CGGACGCCACATACTCTGGTGGGCTCCGGTCCCTGGATCACACCCAGGTGCGCTGGT
 GCCTGCGGTGTATGAGAGGCCACGCCAGGGACCTAGTGTGGGTCCACGGGACCCAGC

 481 TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
 ACTACCCGTATAGGCTTGGCATTATCCTTGTACCATCAACTACACCATAATTAAAATCA
 TGATGGGCATATCCGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAAATTAGT

 541 MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
 GGATGTACGTGGGAGGGGTCGAACACAGGCTGGAAAGCTGCCTGCAACTGGACGCGGGCG
 CCTACATGCACCCCTCCCCAGCTTGTGTCGACCTCGACGGACGTTGACCTGCGCCCCCG

 601 ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThr
 AACGTTGCGATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCACTA
 TTGCAACGCTAGACCTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGT

 661 GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
 CACAGTGGCAGGTCTCCGTGTTCTTACAACCCCTACAGCCTGTCACCCACCCAGTTCG
 GTGTCACCGTCCAGGAGGGACAAGGAAGTGTGGATGGTCGGAACAGGTGGCCGGAGT

 721 HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
 TCCACCTCCACCAAGAACATTGTGGACGTGCACTTGTACGGGGTGGGGTCAAGCATCG
 AGGTGGAGGTGGTCTTGTAAACACCTGCACGTATGAAACATGCCCAACCCAGTTCG

 781 SerTrpAlaIleLysTrpGluTyrValValLeuPheLeuLeuAlaAspAlaArg
 CGTCCTGGGCCATTAAGTGGGAGTACGTCGTTCTCTGTTCTGCTTGAGACGCGC
 GCAGGACCCGGTAATTCACCCCTATGCAGCAAGAGGACAAGGAAGACGAAACGTCTGCG

 841 ValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
 GCGTCTGCTCTGCTTGAGTGTACTCATATCCCAAGCGGAGGCGCTTGGAGA
 CGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCGCCTCCGCGAAACCTCT

 901 LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
 ACCTCGTAATCTTAATGCAGCATCCCTGGCCGGGACGCACGGTCTTGTATCCTTCCTCG
 TGAGCATTATGAATTACGTCGTAGGGACCGGGCCCTGCGTGCAGAACATAGGAAGGAGC

FIG. 47B

PhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrIhrPhe
 961 TGGTCTTCTGCTTGATGGTATTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCT
 ACAAGAAGACGAAACGTAACATAAAACTTCCCATTACCCACGGGCCTGCCAGATGTGGA
 TyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
 1021 TCTACGGGATGTGGCCTCTCCTCCTGCTCCTGTTGGCGTTGCCCGAGCGGTACCGC
 AGATGCCCTACACCAGGAGAGGAGGACAGGACAACCGAACGGGTCGCCATGCGCG
 AspThrGluValAlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThr
 1081 TGGACACGGAGGTGGCCGCGTGTGTGGCGGTGTTCTCGTCGGGTTGATGGCGCTGA
 ACCTGTGCCCTCACCGGCGAGCACACCACCAACAAGAGCAGCCCACACTACCGCGACT
 LeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeu
 1141 CTCTGTCACCATATTACAAGCGCTATATCAGCTGGTGTGCTTGTGGTGGCTTCAGTATTTTC
 GAGACAGTGGTATAATGTTCGCGATATAGTCGACCACGAACACCACCGAACGTCATAAAAG
 ThrArgValGluAlaAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
 1201 TGACCAGAGTGGAAAGCGCAACTGCACGTGTGGATTCCCCCCTAACGTCCGAGGGGGC
 ACTGGTCTCACCTCGCGTTGACGTGCACACCTAACGGGGGGAGTTGCAGGCTCCCCCG
 AspAlaValIleLeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
 1261 GCGACGCCGTCATCTTACTCATGTGTGCTGTACACCCGACTCTGGTATTTGACATCACCA
 CGCTGCGGCAGTAGAATGAGTACACACGACATGTGGGCTGAGACCATAACTGTAGTGGT
 LeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValPro
 1321 ATTGCTGCTGGCGTCTCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTAC
 TTAACGACGACCGGCAGAACGCTGGGAAACCTAACAGGTTTCGGTCAAACGAATTTCATG
 TyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGly
 1381 CCTACTTTGTGCGCGTCCAAGGCCCTCTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCG
 GGATGAAACACGCGCAGGTTCCCGGAAGAGGCCAAGACGCGCAATCGGCCCTACTAGC
 GlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyr
 1441 GAGGCCATTACGTGCAAATGGTCATCATTAAGTTAGGGGCGCTACTGGCACCTATGTTT
 CTCCGGTAATGCACTGTTACCAAGTAGTAATTCAATCCCCCGGAATGACCGTGGATAACAAA
 AsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAla
 1501 ATAACCATCTCACTCCCTTCGGGACTGGCGCACACGGCTTGCAGAGACTGGCCGTGG
 TATTGGTAGAGTGGAGGAAGCCCTGACCCCGTGTGCGAACGCTCTAGACCGGGCACC
 ValGluProValValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThr
 1561 CTGTAGAGCCAGTCGTTCTCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATA
 GACATCTCGGTCAAGCAGAGGGTTAACCTCTGGTGTGAGTAGTGCACCCCCGGTCTAT
 AlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIle
 1621 CCGCCGCGTGGGTGACATCATCACGGCTTGCCTGGTCCCGCAGGGGCCGGAGA
 GGCAGCGCACGCCACTGTAGTTGCCAACGGACAAAGGCCGGTCCCCGGCCCTCT
 LeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThr
 1681 TACTGCTGGGCCAGCCGATGGAATGGCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCA
 ATGACGAGCCCGGTCGGTACCTTACCAAGAGGTTCCCACCTCCAACGACCGCGGGTAGT
 AlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArg
 1741 CGGCGTACGCCAGCAGACAAGGGGCCCTCTAGGGTGCATAATCACCAGCTAACTGGCC
 GCCGCATGCGGGTCGTGTGTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGG
 AspLysAsnGlnValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeu
 1801 GGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCAAACCTCC
 CCCTGTTGGTACCTCCACTCCAGGTCTAACACAGTTGACGACGGGTTGGAG
 AlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIle
 1861 TGGCAACGTGCATCAATGGGTGTGCTGGACTGTCTACACGGGGCCGGAACGAGGACCA
 ACCGTTGCACGTAGTTACCCCACACGACCTGACAGATGGTGGCCCGGCCCTGCTCTGGT
 AlaSerProLysGlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGly
 1921 TCGCGTCACCCAAAGGGTCTGTCATCCAGATGTATAACCAATGTAGACCAAGACCTTGTGG
 AGCGCAGTGGTCCCAGGACAGTAGGTCTACATATGGTACATCTGGTTCTGGAACACC

FIG. 47C

TrpProAlaProGlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeu
 1981 GCTGGCCCGCTCCGCAAGGTAGCCGCTCATGGACACCCCTGCACCTGCCTCGGCTCTCGGACC
 CGACCGGGCGAGGCGTTCCATCGCGAGTAACGTGGGACGTAAACGCCGAGGAGCCTGG

 TyrLeuValThrArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGly
 2041 TTTACCTGGTCACGAGGCACGCCATGTCATTCCCGTGCACGGCTACAGTAAGGGCACGCCGCCCCACTATCGTCCC
 AAATGGACAGTGCTCCGTGCACGGCTACAGTAAGGGCACGCCGCCCCACTATCGTCCC

 SerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeu
 2101 GCAGCCTGCTGTCGCCCGGCCATTCTACTTGAAAGGCTCCTCGGGGGTCCGCTGT
 CGTCGGACGACAGCGGGGCCGGTAAAGGATGAACCTTCGAGGAGCCCCCAGGCAGACA

 CysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAla
 2161 TGTGCCCGCGGGGCACGCCGTGGCATATTAGGGCCGCGGTGTGCACCCGTGGAGTGG
 ACACGGGGCGCCCCGTGCACCGTATAAATCCGGCACCACGTGGCACCTCAC

 LysAlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPhe
 2221 CTAAGGCGGTGGACTTATCCCTGTGGAGAACCTAGAGACAAACCATGAGGTCCCAGGT
 GATTCCGCCACCTGAAATAGGGACACCTTGGATCTGTGGTACTCCAGGGGCCACA

 ThrAspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAla
 2281 TCACGGATAACTCCTCTCCACCAGTAGTGCCCCAGAGCTTCAGGTGGCTCACCTCATG
 AGTGCCTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTAC

 ProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLys
 2341 CTCCCACAGGCAGCGGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATA
 GAGGGGTGTCCGTCGCCGTTTGTGGTCCAGGGCCGACGTATACTGTCGAGTCCCAGAT

 ValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLys
 2401 AGGTGCTAGTACTCAACCCCTCTGGCTGCAACACTGGGCTTGGCTTACATGTCCA
 TCCACGATCATGAGTTGGGAGACAAACGACGTTGTGACCCGAAACCACGAATGTACAGGT

 AlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerPro
 2461 AGGCTCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAAATTACCAACTGGCAGCC
 TCCGAGTACCCCTAGCTAGGATTGTAGTCCTGGCCCCACTTTGTTAACGGTACCGTCGG

 IleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyr
 2521 CCATCACGTACTCCACCTACGGCAAGTTCTTGCCACGGCAGGGCTCGGGGGGGCGCTT
 GGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAA

 AspIleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGly
 2581 ATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTGGGCATCG
 TACTGTATTATTAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCGTAGC

 ThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThr
 2641 GCACTGTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTGTGCTGCCACCGCCA
 CGTGACAGGAACTGGTCTCGTACGCCCGCTCTGACCAACACGAGCGGTGGCGGT

 ProProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThr
 2701 CCCCTCCGGGCTCGTCACTGTGCCCCATCCAAACATCGAGGAGGTTGCTCTGTCCACCA
 GGGGAGGCCCCAGGGCAGTGACACGGGGTAGGGTTGAGCTCCTCAAACGAGACAGGTGGT

 GlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHis
 2761 CCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGAC
 GGCCCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCTCTG

 LeuIlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeu
 2821 ATCTCATCTCTGTCAATTCAAAGAAGAAGTGCACGAACTCGCCGAAAGCTGGTCGCAT
 TAGAGTAGAACAGTAAGTTCTTACGCTGCTTGAGCGGCCGTTCGACCAGCGTA

 GlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGly
 2881 TGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCGACCG
 ACCCGTAGTTACGGCACCGGATGATGGCGCCAGAACACTGCACAGGCAGTAGGGCTGGTC

 AspValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSer
 2941 GCGATGTTGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGGACTTCGACT
 CGCTACAAACAGCAGCACCGGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGA

FIG. 47D

ValIleAspCysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPhe
3001 CGGTGATAGACTGCAATACGTGTCACCCAGACAGTCGATTCAAGCCTTGACCCCTACCT
GCCACTATCTGACGTTATGCACACAGTGGGCTGTCAGCTAAAGTCGGAACTGGGATGGA
ThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
3061 TCACCATTGAGACAATCACGCTCCCCCAGGATGCTGTCTCCCGACTCAACGTCGGGGCA
AGTGGTAACTCTGTTAGTGCAGGGGGCTACGACAGAGGGCGTGAGTTGCAGCCCCGT
ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
3121 GGAATGGCAGGGGGAAAGCCAGGCATCTACAGATTTGTCACCCGGGGAGCGCCCTCCG
CTGTGACCGTCCCCCTCGTCCGTAGATGTCTAACACCGTGGCCCCCTGCAGGGGAGGC
MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
3181 GCATGTTGACTCGTCCGTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGC
CGTACAAGCTGAGCAGGAGACACTCACGATACTGCCTCCGACACGAACCATCTCG
ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
3241 TCACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCG
AGTGCAGGGCGGCTCTGATGTCAATCCGATGCTCGATGACTTGTGGGCCCCGAAGGGC
CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
3301 TGTGCCAGGACCATCTTGAATTGGGAGGGCGTCTTACAGGCTCACTCATATAGATG
ACACGGTCTGGTAGAACCTAAACCCCTCCGCAGAAATGTCCGGAGTGAGTATATCTAC
HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
3361 CCCACTTTCTATCCCAGACAAAGCAGAGTGGGAGAACCTCCTACCTGGTAGCGTAC
GGGTAAAGATAGGGTCTGTTCGTCAACCCCTTGGAGGAATGGACCATCGCATGG
AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
3421 AAGCCACCGTGTGCGCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGGAGT
TTCGGTGGCACACGCGATCCGAGTTCGGGAGGGGTAGCACCCCTGGTCTACACCTCA
LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAla
3481 GTTTGATTCGCCCTCAAGCCCACCCCTCCATGGCCAACACCCCTGCTATACAGACTGGCG
CAAACTAAGCGGAGTCGGGTGGAGGTACCCGGTTGTGGGACGATATGTCTGACCCGC
ValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSer
3541 CTGTTCAGAAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCATGT
GACAAGTCTTACTTAGTGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACGTACA
AlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeu
3601 CGGCCGACCTGGAGGTGTCACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGCTT
GCCGGCTGGACCTCCAGCAGTGTGACGAGCAACCGCCGAGCACCGACGAA
AlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGly
3661 TGGCCGCGTATTGCCGTCAACAGGCTGCGTGGTCAGTGGGAGGGTCGTTGGCTGCTT
ACCGGCGCATAACGGACAGTTGTCGACGCACCAAGTATCACCGTCCCAGCAGAACAGGC
LysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGlu
3721 GGAAGCCGGAATCATACCTGACAGGGAAAGTCCTACCGAGAGTTGATGAGATGGAAAG
CTTCGGCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCAAGCTACTCTACCTTC
CysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGln
3781 AGTGCCTCAGCACTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGC
TCACGAGAGTCGTGAATGGCATGTCAGCTCGTCCCTACTACGAGCGCTCGTCAAGTCG
LysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaVal
3841 AGAAGGCCCTGGCCTCCTGCAAGCCGCTCCGTCAGGAGGGTTATCGCCCCTGCTG
CTTCCGGAGCCGGAGGACGTCGGCGCAGGGCAGTCCGTCTCAATAGCGGGGACGAC
GlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSer
3901 TCCAGACCAACTGGCAAAAACCGAGACCTCTGGGCGAAGCATAATGTGGAACTTCATCA
AGGTCTGGTTGACCGTTTGAGCTCTGGAAAGACCCGCTTCGTATACACCTGAAGTAGT
GlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeu
3961 GTGGGATACAATCTGGCGGGCTTGTCAACGCTGCTGGTAACCCCGCCATTGCTTCAT
CACCCCTATGTTATGAACCGCCCGAACAGTGTGCGACGGACCATTGGGCGGTAAACGAAGTA

FIG. 47E

MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
 4021 TGATGGCTTTACAGCTGCTGTCACCAGCCCCACTAACCACTAGCCAAACCTCCTCTCA
 ACTACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTATCGGTTGGGAGGAGAAGT

 IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
 4081 ACATATTGGGGGGGGTGGGTGGCTGCCAGCTGCCGCCCCGGTGCCTACTGCCTTTG
 TGTATAACCCCCCCCACCCACCGACGGGTCGAGCGGGGGGCCACGGCGATGACGGAAAC

 GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
 4141 TGGGCGCTGGCTTAGCTGGCGCCATCGGCAGTGTGGACTGGGGAGGTCTCATAG
 ACCCGCGACCGAATCGACCGCGCGTAGCCGTACAACCTGACCCCTCCAGGAGTATC

 IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
 4201 ACATCCTTGCAAGGGTATGGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGA
 TGTAGGAACGTCCTACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACT

 GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
 4261 GCGGTGAGGTCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTCGCCCG
 CGCCACTCCAGGGGAGGTGCCTCTGGACCACTAGATGACGGCGTAGGAGAGCGGGC

 AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
 4321 GAGCCCTCGTAGTCGGCTGGCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCG
 CTCGGGAGCATCAGCGCACAGACACGTCGTTATGACGCCGGTGCACCGGGCCCG

 GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
 4381 AGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTCGCCTCCGGGGGAACCATGTTT
 TCCCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAA

 ProThrHisTyrValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSer
 4441 CCCCCACGCACTACGTGCCGGAGAGCGATGCAGCTGCCGCGTCACTGCCATACTCAGCA
 GGGGGTGCCTGATGCACGCCCTCGTACGTCGACGGCGCAGTGACGGTATGAGTCG

 LeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThr
 4501 GCCTCACTGTAACCCAGCTCTGGCGACTGCACCACTGGATAAGCTGGAGTGTACCA
 CGGAGTGACATTGGTCGAGGACTCGCTGACGTGGCACCTATTGAGCCTCACATGGT

 ProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAsp
 4561 CTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGGACTGGATAATGCGAGGTGTTGAGCG
 GAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCCTGACCTATACGCTCCACA

 PheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSer
 4621 ACTTTAACGACCTGGCTAAAGCTAACGCTCATGCCACAGCTGCCCTGGATCCCCTTG
 TGAAATTCTGGACCGATTTCGATTTCGAGTACGGTGTGACGGACCCCTAGGGAAACACA

 CysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHis
 4681 CCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGC
 GGACGGTGCAGCCATATTCCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGG

 CysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArg
 4741 ACTGTGGAGCTGAGATCACTGGACATGTCAAAACGGGACGATGAGGATCGTCGGTCTA
 TGACACCTCGACTCTAGTGCACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGAT

 ThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCys
 4801 GGACCTGCAGGAACATGTGGAGTGGGACCTCCCATTAATGCCTACACCACGGGCC
 CCTGGACGTCCTGTACACCTCACCCCTGGAAAGGGGTAATTACGGATGTGGTGCCCGGG

 ThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyr
 4861 GTACCCCCCTCCTGCGCCGAACATACGTTCGCGTATGGAGGGTGTGCAGAGGAAT
 CATGGGGGGAGGACGCGGTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTA

 ValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeu
 4921 ATGTGGAGATAAGGCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACA
 TACACCTCTATTCCGTCACCCCTGAAGGGTATGCAACTGCCACTGATGACTGTTAG

 LysCysProCysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeu
 4981 TCAAATGCCGTGCGAGGTCCCATGCCGAATTTCACAGAATTGGACGGGTGCGCC
 AGTTACGGGCACGGTCCAGGGTAGCGGGCTAAAAAGTGTCTAACCTGCCACCGCGG

FIG. 47F

HisArgPheAlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGly
5041 TACATAGGTTTGCGCCCTGCAAGCCCTTGCTGGGAGGAGGTATCATTAGAGTAG
ATGTATCCAAACGCGGGGGACGTTGGGAACGACGCCCTCCATAGTAAGTCTCATC

LeuHisGluTyrProValGlySerGlnLeuProCysGluProGluProAspValAlaVal
5101 GACTCCACGAATAACCGGTAGGGTCGCAATTACCTTGCAGGCCGAACCGGACGTGGCCG
CTGAGGTGCTTATGGCCATCCCAGCTTAATGGAACGCTCGGGCTGGCCTGCACCGGC

LeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeu
5161 TGTTGACGTCCATGCTCACTGATCCCTCCCATATAACAGCAGAGGGCGCCGGCGAAGGT
ACAAC TGCAAGGTACGAGTGACTAGGGAGGGTATATTGTCGCTCCGCCGGCCGCTTCCA

AlaArgGlySerProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSer
5221 TGGCGAGGGGATCACCCCCCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCGCTCCAT
ACCGCTCCCTAGTGGGGGGAGACACGGTCGAGGAGCCGATCGTCGAGGTA

LeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsn
5281 CTCTCAAGGCAACTTGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCA
GAGAGTTCCGTTAACGTTGGCGATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGT

LeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysVal
5341 ACCTCCATGGAGGCAGGAGATGGCGGGCAACATCACCAGGGTTGAGTCAGAAAACAAAG
TGGAGGATAACCTCCGCTCTACCCGCCGTTGAGTGGTCCCAACTCAGTCTTTGTTTC

ValIleLeuAspSerPheAspProLeuValAlaGluGluAspGluArgGluIleSerVal
5401 TGGTGATTCTGGACTCCTCGATCCGCTTGTGGCGAGGAGCAGCAGGGAGATCTCCG
ACCACTAACGACCTGAGGAAGCTAGGCGAACACCGCCTCCTGCTGCCCTCTAGAGGC

ProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArg
5461 TACCCGCAGAAATCCTCGGAAAGTCTCGGAGATTGCCAGGCCCTGCCGTTGGCGC
ATGGCGCTTTAGGACGCCCTAGAGCCTCTAACGGGGTCCGGGACGGCAAACCGCG

ProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyrGluProProVal
5521 GGCGGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACCTG
CCGGCCTGATATTGGGGGGCGATCACCTCTGACCTTTTGGGCTGATGCTTGGTGGAC

ValHisGlyCysProLeuProProProLysSerProProValProProProArgLysLys
5581 TGGTCCATGGCTGCCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGA
ACCAGGTACCGACAGGGGAAGGTGGAGGTTTCAAGGGAGGACACGGAGGCGGAGCCTTCT

ArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArg
5641 AGCGGACGGTGGCTCTACTGAATCAACCTATCTACTGCCTGGCCGAGCTGCCACCA
TCGCCTGCCACCAGGAGTGACTTAGTGGGATAGATGACGGAACCGGCTGAGCGGTGGT

SerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGlu
5701 GAAGCTTGGCAGCTCCTCAACTCCGGCATTACGGCGACAATACGACAACATCCTCTG
CTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGAC

ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
5761 AGCCCCGCCCTCTGGCTGCCCGACTCCGACGCTGAGTCCTATTCCCTCATGCCCG
TCGGCGGGGAAGACCGACGGGGGCTGAGGCTGCACTCAGGATAAGGAGGTACGGGG

LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
5821 CCTGGAGGGGGAGCCTGGGATCCGGATTTAGCGACGGGTCTGGTCAACGGTCAGTA
GGGACCTCCCCCTCGGACCCCTAGGCCCTAGAACATCGCTGCCAGTACCGAGTTGCCAGTCAT

GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
5881 GTGAGGCCAACGCGGAGGATGTCGTGCTCAATGCTTACTCTGGACAGGCGCAC
CACTCCGGTTGCGCCTCCTACAGCACACGAGTTACAGAATGAGAACCTGTCGCGT

ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
5941 TCGTCACCCCGTGCAGCGCGGAAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGT
AGCAGTGGGGCACGCGCGCCTTGTCTTGACGGTAGTTACGTGATTGAGCA

LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
6001 TGCTACGTACCCACAATTGGGTATTCCACACCTCACGCAGTGCTTGCAAAAGGCAGA
ACGATGCAGTGGTGTAAACCACATAAGGTGGAGTGCACGAAACGGTTCCGCT

FIG. 47G

LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGlu
6061 AGAAAGTCACATTGACAGACTGCAAGTTCTGGACAGCCATTACCAAGGACGTACTCAAGG
TCTTTAGTGTAAACTGTCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCC

ValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSer
6121 AGGTTAAAGCAGCGCGTCAAAGTGAAGGCTAACTGCTATCCGTAGAGGAAGCTTGCA
TCCAATTCGTCGCCAGTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTT

LeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCys
6181 GCCTGACGCCCCCCACACTCAGCAAATCAAAGTTGGTTATGGGGCAAAAGACGTCCGTT
CGGACTGCGGGGTGTGAGTCGGTTAGGTTCAAACCAATACCCGTTCTGCAGGCAA

HisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsn
6241 GCCATGCCAGAAAGGCCGTAAACCACATCAAACCTCCGTGTGGAAAGACCTTCTGGAAAGACA
CGGTACGGTCTTCCGGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAAGACCTTCTGT

ValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGlu
6301 ATGTAACACCAATAGCAACTACCATCATGGCTAAGAACGAGGTTTCTGCCTCAGCCTG
TACATTGTGGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAAAGACGCAAGTCGGAC

LysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyValArgValCys
6361 AGAAGGGGGGTCGAAGCCAGCTCGTCTCATCGTTCCCGATCTGGCGTGCACGCGTGT
TCTTCCCCCAGCATTGGTCGAGCAGAGTAGCACAAAGGGCTAGACCCGACACGCGCACA

GluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSer
6421 GCGAAAAGATGGCTTGTACGACGTGGTTACAAAGCTCCCTGGCCGTGATGGGAAGCT
CGCTTTCTACCGAAACATGCTGCACCAATGTTCGAGGGAAACCGGCACTACCCCTCGA

TyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSer
6481 CCTACGGATTCCAATACTCACCAAGGACAGCGGGTTGAATTCTCGTGCAGCGTGGAAAGT
GGATGCCTAAGGTTATGAGTGGCTCTGTCGCCAACTTAAGGAGCACGTTCGCACCTTC

LysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGlu
6541 CCAAGAAAACCCCAATGGGGTTCTGTATGATAACCCGCTGCTTGAACAGTCACGTC
GGTTCTTTGGGGTTACCCCAAGAGCATACTATGGCGACGAAACTGAGGTGTCAGTGAC

SerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArg
6601 AGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGTACCTCGACCCCCAAGCCC
TCTCGCTGTAGGCATGCCTCCGTTAGTGGTACAACACTGGAGCTGGGGGTTCGGG

ValAlaIleLysSerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArg
6661 GCGTGGCCATCAAGTCCCTACCGAGAGGTTATGTTGGGGCCCTTACCAATTCAA
CGCACCGGTAGTTCAAGGGAGTGGCTCTCGAAATACAACCCCGGGAGAATGGTTAAGTT

GlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGly
6721 GGGGGGAGAACTGCGGCTATCGCAGGTGCGCGCGAGCAGGGCTACTGACAACACTAGCTGTG
CCCCCTCTTGACGCCATAGCGTCCACGGCGCGCTGCCGCATGACTGTTGATCGACAC

AsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAsp
6781 GTAACACCCCTACTTGCTACATCAAGGCCGGGAGGCTGTGAGCCGAGGGCTCCAGG
CATTGTGGGAGTGAACGATGTAGTCCGGGCCGTGGACAGCTCGCGTCCCGAGGTCC

CysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGln
6841 ACTGCACCATGCTCGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCC
TGACGTGGTACGAGCACACACCCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGG

GluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProPro
6901 AGGAGGACGCCGAGCCTGAGAGGCTTACGGAGGCTATGACCAAGGTACTCCGCCCCCCC
TCCTCCTGCGCCGCTGGACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGG

GlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnVal
6961 CTGGGGACCCCCCACACCAACAGAAATACGACTGGAGCTCATAACATCATGCTCCTCCAACG
GACCCCTGGGGGGTGTGGTCTTATGCTAACCTCGAGTATTGTAGTACGAGGAGGTTGC

SerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThr
7021 TGTCAAGTCGCCACGACGGCGCTGGAAAGAGGGCTACTACCTCACCCGTGACCCCTACAA
ACAGTCAGCGGGTGCTGCCGCACCTTCTCCAGATGATGGAGTGGCAGTGGGACTGGGATGTT

FIG. 47H

ProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGly
7081 CCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCATTCTGGCTAG
GGGGGGAGCGCTCTGACGCACCCCTGTGCGTTCTGTGAGGTCAGTTAAGGACCGATC

AsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePhe
7141 GCAACATAATCATGTTGCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTCT
CGTTGTATTAGTACAACGGGGGTGTGACACCCGCTCTACTATGACTACTGGGTAAAGA

SerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAla
7201 TTAGCGTCCTTATAGCCAGGGACCAGCTTGAAACAGGCCCTCGATTGCGAGATCTACGGGG
AATCGCAGGAATATCGGTCCCTGGTCGAACCTGTCCGGGAGCTAACGCTCTAGATGCC

CysTyrSerIleGluProLeuAspLeuProProIleIleGlnArgLeu
7261 CCTGCTACTCCATAGAACCACTTGATCTACCTCCAATCATTCAAAGACTC
GGACGATGAGGTATCTGGTGAAGTAGATGGAGGTTAGTAAGTTCTGAG

FIG. 48

ProSerProValValGlyThrAspArgSerGlyAlaProThrTyrsSerTrpGly
1 CTCAGCCCCCTGGTGGAAACGCCAGGTCGGCCCTACAGCTGGG
GAGGGTCCGGGCAACCACCCCTTGCTGGCTGTCCAGCCCCGGATGGATGTCGACCC
61 GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
CACTTTACTATGCCTGAGAAAGCAGGAATTGTTATGGTCCGGTGGCAATTGGT
GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
121 TCGGTGTACCTGGATGAACTCAACTGGATTCAACCAAAGTGTGGGAGGGCCTCCTGTG
AGCCAACATGGACCTACTTGAGTTGACTTAAGTGGTTCACACGCCCTCGCGGAGGAACAC
IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLyShiSPro
181 TCATGGAGGGGGGGCAACACCCCTGCACTGCCCAACTGATTGCTTCCGCAAGCATC
AGTAGCCTCCCCGGGGCTGGGACGTTGACGGGGTGAAGTAACGAAGGGCTCGTAG
AspAlaThrTyrSerArgCysGlySerGlyProTrpLeuThrProArgCysLeuValAsp
241 CGGACGCCACATACTCTGGCTGGGCTCCGGTCCCTGGCTCACACCCAGGTGGCTGGTGC
GCCTGGGTGTATGAGGCCACGGCCAGGGACGGAGGTGGGTCACGGACAGC

TyrProTyrrArgLeuTrpHiStyrrProCysThrIleAsnTyrrThrIlePhelysIleArg
301 ACTACCCGATAAGGCTTGGCATATACTCTGTACCATCAACTACACCATATTAAATCA
TGATGGCATATCCGAAACCGTAATAAGAACATGGTAGTGGATGGTTAGT

MetTyryValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
361 GGATGGTACGTGGGGGGTGGAGGACAGGGCTGGAAAGCTGGCTGCCTGCAACTGGACGGGG
CCTACATGGCACCCCTCCCAGCTCGTGTCCGACGGACGTTGACCTGGCCCCGGC
-----Overlap with 12f-----
ArgCysAspLeuGluAspArgSerGluLeuSerProLeuLeuThrThrThr
421 AACGTTGGCAGCTGGAAAGACAGGGACAGGTCCGAGCTCAGCCCCGTTACTGCTGACCACTA
TTGCAACGCTAGACCTTCTGTCCCTGTCCAGGGCAATGACGACTGGTGA

GlnTrpGlnValLeuProAlaLeuSerThrLeuProAlaLeuSerThrGlyLeu
481 CACAGTGGCAGGGTCCCTGGTGTCTACAACCCCTGGCCAGGGCTGACCCGCTCA
GTGTCAACCGTCAGGGCACAGGAAGTGTGGGACGGTGGGAACAGGTGGCAATGACGACTGGTGA

FIG. 49

LeuPheTerHisIleSpheAsnSerSerGlyCysProGluArgLeuAlaSerCysArg
1 GCTTTCTATCACCAAGTCAACTCTAGGCTGTCCCTGAGAGGCTAGCCAGCTGCCG
CGAAAAGATACTGTTCAAGTGAGAAGTCCGACAGGA
ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTerYralaAsnGlySerGlyPro
61 ACCCCTAACCGATTGACCAGGGCTGGGCCTATCAGTTATGCCAACCGAAAGCGGCC
TGGGAATGGCTAAACTGGTCCCAGCCCCGGGATAGTCATAACGGTTGCCCTTGGCGGG
AspGlnArgProTyrcystrPhiIstyrProProLysProCysGlyIleValProAlaLys
121 CGACCAGCCCCCTACTGCTGGCAACTACCCCCAAACCTTGGGTATTGTGCCCGGAA
GCTGGTGGGGGATGACGACCGGTGATGGGGTTGGAAACGCCATAACGGGGCTT
---Overlap with 13i---
SerValCysGlyProValItyrCysPheThrProSerProValValVal
181 GAGTGTGTGTGGTCCGGTATATTGCTTCACTCCCCAGCCCGTGGTGGTGG
CTCACACACACCAGGCCATATAACGAAGTGAGGGTGGGGCACCAACCACCC

FIG. 50

LeuValMetAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAla
1 TTGGTAAATGGCTCAGCTGCTCCGGATCCACAAAGCCATCTGGACATGATCGCTGGTGCT
ACCATAACCGAGTCGACGAGGGCTAGGGTAGAACCTAGGTACTAGCGACACAGA
HisTrpGlyValLeuAlaGlyIleAlaIleAlaIleAlaIleAlaIleAlaIleAlaIleAla
61 CACTGGGGAGTCCTGGGGCATAGCGTATTCTCCATGGTGGGAACACTGGCGAAGGTC
GTGACCCCCCTCAGGACCCGGCTATGCCATAAAGAGGTACCCCTTGACCCGCTTCCAG
LeuValValLeuLeuPheAlaGlyValAspAlaGluThrHisValThrGlyGlySer
121 CTGGTAGTGCTGCTGCTATTGCCGGCTCGACCCGGAAACCCACGTCACCGGGGGAAAGT
GACCATCACGACGACGGATAAACGGGGCGACCTGGCCAGCTGGCCCTTTGGTGCAGTGGCTTCA
AlaGlyHisThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLySGLnAsnVal
181 GCCGGCCACACTGTGTCGGATTGGCTAGCTCGCACCCAGGGGCCAGCAGAACGTC
CGGCCGGTGTGACACAGACCTAACAAATGGAGGGAGGAGGGTGGCCGGTTCGTCTTGCAG
GlnLeuIleAsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAsp
241 CAGCTGATCAAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACCTGCAATGAT
GTCGACTAGTTGGTTGCCGTCACCGTGGAGTTATGGCCGGACTTACGTTGACGTACTA

SerLeuAsnThrGlyTrpLeuAlaGlyLeuPheTerhiShisLysPheAsnSerSerGly
301 AGCCTAACACACGGCTGGCAGGGCTTTCTATCACCAAGTCAACTCTTCAAGTTGAGTCCG
TCGGAGTTGGTGGCCGACCAACCGTCCCAGCAACCCGTC
-----Overlap with K9-1-----
CysProGluArgLeuAlaSerCysArgPro
361 TGTCCCTGAGGGCTAGCCAGCTGCCGACCC
ACAGGACTCTCCGATGGTCGACGGTGGG
-----Overlap with 26j-----

FIG. 51

GlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrpAsp
1CGCAAGGGTTGCCATTGGCTCATATCCCGCCATATAACGGGTACCGCATGGCATGGG
GCGTTCACGTTAACGAGATAAGGGCGTATATTGGCCAGTACCGGTACCGTAGCC

MetMetMetAsnTrpSerProThrThrAlaLeuValMetAlaGlnLeuLeuArgIlePro
61 ATATGATGATGAACTGGTCCCCTACGACGGCGTTGGTAATTGGCTACGCTGCTCCGGATCC
TATACTACTTGTACCGGGATGCTGCCGCAACCATTACCGAGTCGAGGGCTAGG

GlnAlaIleLeuAspMetIleAlaIleAlaHisTrpGlyValLeuAlaGlyIleAlaTyr
121 CACAAGGCCATCTTGACATGTGATCGGCTGGCTCATCTGGAGTCCTGGCGGGCATAGCGT
GTGTTGGTAGAACCTGTACTAGCGACCACTAGCGACCGAGTGAACCGCCCTCAGGACCGGCGTATCGCA

-----Overlap with CA59a-----

PheSerMetValGlyAsnTrpAlaLysValLeuValValLeuPheAlaGlyVal
181 ATTCTCCATGGTGGGAACCTGGGAAGGTCCCTGGTAGTGGCTGCTGCTATTGCGGGCG
TAAGAGGTACCAACCCCTGACCCGCTTCCAGGACCATCACGACCGATAAACGGCCGC

AspAlaGlutAlaGlyValThrAla
241 TCGACGGGAAACCCACGGTACCCGGG
AGCTGGCGCTTGGGTGAGTGGCCCC

FIG. 52.

CysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGln
1 GGTGGTGGCGATGCCCTACGGTGGCACCCAGGATGGCAAACACTCCCCGGGACGCA
ACAACCCACCGCTACTGGGATGCCACCGGTGGTCCCTACCGTTGAGGGGCGCTGGT
LeuArgArgHisIleAspLeuValGlySerAlaThrLeuCysSerAlaLeuThrVal
61 GCTTCGACGTCACATCGATCTGCTTGCTGGAGGGCCACCCCTCTGTTGGCCCTCTACGT
CGAAGGCTGCAGTAGCTAGACGAACAGCCCCTCGGGGGAGACAAAGCCGGAGATGCC
GlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArg
121 GGGGGACCTATGGGGCTCTGTCTTCTGTCGGCCAACACTGTTCACCTCTCCAGGGCG
CCCCCTGGATAACGGCCAGACAGAACAGAAACAGAGAACAGAGAACAGAGGGTCCGC

HisTrpThrThrGlnGlyCysAsnCysSerIleThrProGlyHisIleThrGlyHisArg
181 CCACTGGACGACGCAAGGTGCAATTGCTCTATCTATCCGGCCATATAACGGGTCAACCG
GGTGAACCTGCTGGCTTCCAAACGTTAACGAGATAAGGAGATAGATGGCCGGTATATTGCCAGTGGC
-----Overlap with CA84a-----
MetAlaIlePaspMetMetAsnTrpSerProThrThrAlaLeuValValAlaGlnLeu
241 CATGGCATGGGATATGATGAACTGGTCCCCTACGACGGCTTGGTAGTGGCTCAGCT
GTACCGTACCCCTATACTACTACTGACCAGGGATGCTGGCGCAACCATCACCGAGTCGA

LeuArgIleProGlnAla^a
301 GCTCCGGATCCACAAGCC
CGAGGCCCTAGGGTGGTGG

FIG. 53

SerThrGlyLeuTyRHisValThraAsnAspCysProAsnSerSerIleValTyrgluAla
1 CCTCCACGGGCTTACCACTACGGTCACCAATGATTGCCCTAACCTCGAGTATTGTGTTACGGGC
GAGGTGGCCCCGAAATGGTGCAGTGGTTACTAACGGGATTTGAGCTATAACACATGCTCCG

AlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSer
61 GGGCGATGCCATCTGCACACTCCGGGTGGCTCCCTTGCGTACCGGCAACGCCCTC
CCGGCTACGGTAGCTGAGCTGAGGGCCCACGGCAGGGAAACGCCAAGCAACTCCCGTTGGGAG

ArgCystRPValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThr
121 GAGGTGGTGGTGGCGATGCCCTACGGTGCCACCAGGGATGGCAAACCTCCGGCGAC
CTCCACAAACCCACCGCTACTGGGATGCCACCGGTGGTCCCTACCGTTGAGGGGGCTG

Overlap with CA156e-----
GlnLeuArgArgHisIleAspLeuValAlaThrLeuCysSerAlaLeuTyR
181 GCAGGCTTCGACGTACATCGATCTGCTTGCTGGAGGGCTACCCCTCTGGCCCTCTA
CGTCGAAGCTGCAGTGTAGCTAGCGAACAGCCCTCGCGATGGAGACAAGGGGGAGAT

ValGlyAspLeuCysGlySerValPheLeu
241 CGTGGGGACTTGTGGGTCTGTCTTCTTG
GCACCCCTGAAACACGCCAGACAGAAAGAAC

FIG. 54A

1 ArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAspLeuMet
1 AGGTGCGCAATTGGGTAAGGTATCGATAACCTACGTGCGGCTTCGCCGACCTCATG
TCCAGCGCGTTAACCCATTCCAGTAGCTATGGGAATGCACGCCAAGCGGCTGGAGTAC

61 GlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGly
61 GGGTACATACCGCTCGTCGGCGCCCTCTGGAGGCCTGCCAGGGCCCTGGCGCATGGC
CCCATGTATGGCGAGCAGCCGGGGAGAACCTCCCGACGGTCCCAGGACCGCGTACCG

121 ValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPhe
121 GTCCGGGTTCTGAAAGACGGCGTGAACATATGCAACAGGGAACCTCCTGGTTGCTTT
CAGGCCAACCTTCTGCCGACTTGATACGTTGCCCTTGGAAAGGACCAACGAGAAAG

181 SerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnVal
181 TCTATCTTCTCTGGCCCTGCTCTTGCTTGACTGTGCCGCTTCGGCTACCAAGTG
AGATAGAAGGAAGACGGGACGAGAGAACGAACTGACACGGGCGAAGCCGGATGGTCAC

241 ArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIleValTyr
241 CGCAAACCTCACGGGGCTTACACACGTACCAATGATTGCCCTAACTCGAGTATTGTGTAC
GCGTTGAGGTGCCCGAAATGGTGCAGTGGTTACTAACGGGATTGAGCTCATAACACATG

301 GluAlaAlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsn
301 GAGGCAGGCCGATGCCATCCTGCACACTCCGGGGTGCCTTGCGTTGAGGGCAAC
CTCCGCCGGCTACGGTAGGACGTGTGAGGCCACGCAGGGAACGCAAGCACTCCGTTG

361 AlaSerArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuPro
361 GCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCCCC
CGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGGTGGCCCTACCGTTGAGGGG

421 AlaThrGlnLeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAla
421 GCGACGCACTTCGACGTCACATCGATCTGCTTGCGGAGCGCCACCCCTGTTCGGCC
CGCTGCGTCGAAGCTGCACTGAGCTAGACGAAACAGCCCTGCCGTGGAGACAAGCCGG

481 LeuTyrValGlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSer
481 CTCTACGTGGGGGACCTATGCGGGCTGTCTTCTGTCGGCCAAGTGTACCTTCTCT
GAGATGCACCCCTGGATACGCCAGACAGAAAGAACAGCCGGTTGACAAGTGGAAAGAGA

541 ProArgArgHisTrpThrThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThr
541 CCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCAGGCCATATAAACG
GGGTCCCGCGGTGACCTGCTCCGTTCAACGTTAACGAGATAGATAGGGCCGGTATATTGC

601 GlyHisArgMetAlaTrpAspMetMetAsnTrpSerProThrThrAlaLeuValMet
601 GGTCAACCGCATGGCATGGGATATGATGATGAACTGGTCCCCTACGACGGCGTTGGTAATG
CCAGTGGCGTACCGTACCCCTATACTACTACTTGACCAGGGGATGCTGCCGCAACCATTAC

FIG. 54B

AlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGly
661 GCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGCTCACTGGGA
CGAGTCGACGAGGCCTAGGGTGGTAGAACCTGTACTAGCGACCACGAGTGACCCCT

ValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysValLeuValVal
721 GTCCTGGCGGGCATAGCGTATTCTCATGGTGGGAACTGGCGAAGGTGCTGGTAGTG
CAGGACCGCCGTATCGATAAAGAGGTACCAACCCCTGACCGCTTCCAGGACCACATCAC

LeuLeuLeuPheAlaGlyValAspAlaGluThrHisValThrGlySerAlaGlyHis
781 CTGCTGCTATTGCCGGCGTCACGCGGAAACCCACGTACCGGGGGAAAGTGCCGGCCAC
GACGACGATAAACGGCCGCAGCTGCGCCTTGGGTGCAGTGGCCCCCTCACGGCCGGTG

ThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIle
841 ACTGTGTCGGATTGTTAGCCTCTCGCACCAGGCGCCAACGAGAACGTCCAGCTGATC
TGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGCCGGTCTGCAGGTCGACTAG

AsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsn
901 AACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACCTGCAATGATAGCCTAAC
TTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCGGACTTGACGTTACTATCGGAGTTG

ThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsnSerSerGlyCysProGlu
961 ACCGGCTGGTGGCAGGGCTTTCTATCACCAAGTTCAACTCTTCAGGCTGTCCTGAG
TGGCCGACCAACCGTCCCAGAAAGATACTGGTGGTCAAGTTGAGAAGTCCGACAGGACTC

ArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyr
1021 AGGCTAGCCAGCTGCCGACCCCTTACCGATTGACCAGGGCTGGGGCCCTATCAGTTAT
TCCGATGGTCGACGGCTGGGAATGGCTAAAAGTGGCTCCGACCCGGGATAGTCATA

AlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrProProLysProCys
1081 GCCAACGGAAAGCGGCCCGACCAGCAGCCCTACTGCTGGCACTACCCCCAAAACCTTGC
CGGTTGCCCTCGCCGGGCTGGTCGCGGGGATGACGACCGTGTGGGGGGTTTGGAACG

GlyIleValProAlaLysSerValCysGlyProValTyrCysPheThrProSerProVal
1141 GGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCCGTG
CCATAACACGGCGCTCTCACACACACCAGGCCATAAACGAAGTGGAGGGTCGGGCAC

ValValGlyThrThrAspArgSerGlyAlaProThrSerTrpGlyGluAsnAspThr
1201 GTGGTGGGAACGACCGACAGGTGGCGCGCCACCTACAGCTGGGTGAAATGATACG
CACCAACCTTGCTGGCTGTCCAGCCCGCGGGTGGATGTCGACCCACTTTACTATGC

AspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrp
1261 GACGTCTCGCCTTAACAATACCAGGCCACCGCTGGCAATTGGTCCGGTGTACCTGG
CTGCAGAACGAGGAATTGTTATGGTCCGGTGGCGACCCGTTAACAGCAACATGGACC

MetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysValIleGlyGlyAla
1321 ATGAACACTGAGATTCAACAAAGTGTGGAGCGCCCTCTGTGTCATCGGAGGGCG
TACTTGAGTTGACCTAACGTGGTTAACACGCCCTCGCGGAGGAACACAGTAGCCTCCCCGC

GlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisProAspAlaThrTyr
1381 GGCAACAAACCCCTGCACGTGCCCACTGATTGCTCCGCAAGCATTCCGGACGCCACATAC
CCGTTGGTGGGACGTGACGGGGTGAACAGCAAGGCGTGTAGGCCTGCGGTGTATG

SerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAspTyrProTyrArg
1441 TCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCGCTGGTCACTACCGTATAGG
AGAGCCACGCCGAGGCCAGGGACCTAGTGTGGTCCACGGACAGCTGATGGCATATCC

LeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArgMetTyrValGly
1501 CTTTGGCATTATCCTGTACCATCAACTACACCATATTAAATCAGGATGTACGTGGGA
GAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAAATTTAGTCCTACATGCACCCCT

GlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeu
1561 GGGGTGAAACACAGGCTGGAAAGCTGCCGTCAACTGGACGCGGGGCGAACGTTGCGATCTG
CCCCAGCTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGCTTGCACGCTAGAC

GluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrGlnTrpGlnVal
1621 GAAGACAGGGACAGGTCCGAGCTCAGCCCCGTTACTGCTGACCAACTACACAGTGGCAGGTC
CTTCTGTCCCTGTCCAGGCTGAGTCGGGCAATGACGACTGGTAGTGTGTCACCGTCCAG

FIG. 54C

LeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGln
 1681 CTCGGTCTCCTCACAAACCTACCAAGCCTTGCCACCGGCCTCATCCACCTCCACCAAG
 GAGGGCACAAGGAAGTGTGGATGGTCGGAACAGGTGGCCGGAGTAGGTGGAGGTGGTC

 AsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAlaSerTrpAlaIle
 1741 AACATTGTGGACGTGCAGTACTTGTACGGGGTGGGGTCAAGCATCGCTCTGGGCCATT
 TTGTAACACCTGCACGTCACTAACATGCCACCCCAGTCGTAGCGCAGGACCCGGTAA

 LysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArgValCysSerCys
 1801 AAGTGGGAGTACGTCTCTCTGTTGCTGCAGACGCGCGCTGCTCCTGC
 TTCACCCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCAGCAGACGAGGACG

 LeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeu
 1861 TTGTGGATGATGCTACTCATATCCAAGCGGAGGCGGTTGGAGAACCTCGTAATACTT
 AACACCTACTACGATGAGTATAGGGTTCGCCCTCGCCGAAACCTTGGAGCATTATGAA

 AsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPhe
 1921 AATGCAGCATCCCTGGCCGGACGCACGGCTTGATCCTCCTCGTGTCTGCTT
 TTACGTCTAGGGACCAGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAGAAGACGAAA

 AlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrp
 1981 GCATGGTATTGAAGGGTAAGTGGGTGCCGGAGCGGTCTACACCTCTACGGGATGTGG
 CGTACCATAAACTTCCCATTCAACCCACGGGCCATGCCAGATGTGAAAGATGCCCTACACC

 ProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluVal
 2041 CCTCTCTCTGCTCTGGCGTTGGCCAGCGGGCGTACGCGCTGGACACGGAGGTG
 GGAGAGGAGGACGAGGACAACCGCAACGGGTCGCCGATGCCGACCTGTGCCCTCAC

 AlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyr
 2101 GCGCGCTGTTGGCGGTGTTCTCGTGGTTGATGGCGCTGACTCTGTCACCATAT
 CGCGCAGCACCGCCACAACAAGAGCAGCCAACTACCGCGACTGAGACAGTGGTATA

 TyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGlu
 2161 TACAAGCGCTATATCAGCTGGTCTTGTTGCTGACTCTGACCAAGACTGGTCTACCT
 ATGGTCGCGATATAGTCGACACGAAACACCACCGAAGTCATAAAAGACTGGTCTCACCT

 AlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIle
 2221 GCGCAACTGCACGTGTGGATTCCCCCCTAACGTCCGAGGGGGCGCAGCGCGTCATC
 CGCGTTGACGTGACACACTAAGGGGGAGTTGAGGCTCCCCCGCGTGGCAGTAG

 LeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuAla
 2281 TTACTCATGTGTGCTGTACACCCGACTCTGGTATTGACATACCAAATTGCTGCTGGCC
 AATGAGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGGTTAACGACGACCGG

 ValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArg
 2341 GTCTTCGGACCCCTTGATTCTCAAGCCAGTTGCTAAAGTACCCACTTGTGCGC
 CAGAACGCTGGGAAACCTAACGAAATTCATGGATGAAACACGCG

 ValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrVal
 2401 GTCCAAGGCCTCTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTG
 CAGGTTCCGGAAAGAGGCCAACGCGCAATCGCGCTTACTAGCCTCCGGTAATGCAC

 GlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThr
 2461 CAAATGGTCATCATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCACT
 GTTACCACTAGTAATTCAATCCCCCGCAATGACCGTGGATACAAATATTGGTAGAGTGA

 ProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProVal
 2521 CCTCTCGGGACTGGGCGCACAACCGCTTGCGAGATCTGGCGTGGCTGTAGAGCCAGTC
 GGAGAACCCCTGACCCCGCTGTTGCCAACGCTCTAGACCGGGCACCGACATCTCGGTCA

 ValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGly
 2581 GTCTTCTCCAAATGGAGACCAAGCTCATACCGTGGGGGGCAGATACCGCCGCGTGG
 CAGAACGAGGGTTTACCTGGTTCGAGTAGTGCACCCCCCGTCTATGGCGGCCACGCCA

 AspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyPro
 2641 GACATCATCAACGGCTTGCGTGTGGCCAGGGGGCAGGAGATACTGCTGGGCC
 CTGTAGTAGTTGCCAACGGACAAAGCGGGCGTCCCCGGCCCTCATGACGAGCCGGT

FIG. 54D

2701 AlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGln
 GCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCAG
 CGGCTACCTTACCAAGAGGTTCCCCACCTCCAAACGACCACGGTAGTGCGCATGCGGTC

 2761 GlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGln
 CAGACAAGGGGCCTCTAGGGTGCATAATCACCAAGCTTAACGGCCGGGACAAAAACCAA
 GTCTGTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGGCCCTGTTTGGTT

 2821 ValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIle
 GTGGAGGGTGGAGGTCCAGATTGTCAACTGCTGCCAACCTTCCCTGGCAACGTGCATC
 CACCTCCCACCTCAGGTCTAACACAGTTGACGACGGGTTGGAAGGACCGTTGCACGTAG

 2881 AsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLys
 ATGGGGTGTGCTGGACTGTCTACCACGGGGCCGAAAGGACCATCGCGTCACCCAG
 TTACCCCACACGACCTGACAGATGGTCCCCGGCTTGCTCTGGTAGCGCAGTGGGTC

 2941 GlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaPro
 GGTCCCTGTCATCCAGATGTATACCAATGTAGACCAAGAACCTTGTGGCTGGCCGCTCG
 CCAGGACAGTAGGTCTACATATGGTTACATCTGGTCTGGAAACACCCGACCGGGCGAGGC

 3001 GlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThr
 CAAGGTAGCCGCTCATGGACACCCTGCACTTGCGGCTCTCGGACCTTACCTGGTCACG
 GTTCCATGGCGAGTAAGTGTGGACGTGAACGCGAGGAGCCTGGAAATGGACAGTGC

 3061 ArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSer
 AGGCACGCCGATGTCATTCCCGTGCGCCGGGGGTGATAGCAGGGGCAGCCTGCTGTCG
 TCGTGCGGCTACAGTAAGGGCACGCCGCCCCACTATCGTCCCCGTCGGACGACAGC

 3121 ProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGly
 CCCCGGCCATTCTACTTGAAAGGCTCCTCGGGGGGTCCGTTGTGCCCCGGGG
 GGGGCCGGGTAAAGGATGAACTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCC

 3181 HisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAsp
 CACGCCGTGGCATATTAGGCCGCGGTGTGCAACCGTGGAGTGGCTAAGGCCGGTGGAC
 GTGCCGACCCGTATAATCCCGGCCACACGTGGCACCTCACCGATTCCGCCACCTG

 3241 PheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSer
 TTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTACGGATAACTCC
 AAATAGGGACACCTCTGGATCTGTGGTACTCCAGGGGCCACAAGTGCCTATTGAGG

 3301 SerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySer
 TCTCCACCAAGTAGTGCCCCAGAGCTTCAGGTGGCTCACCTCCATGCTCCCACAGGCAGC
 AGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTC

 3361 GlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeu
 GGCAAAAGCACCAAGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTC
 CCGTTTCGTGGTCCAGGGCGACGTATACTCGAGTCCGATATTCCACGATCATGAG

 3421 AsnProSerValAlaAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIle
 AACCCCTCTGTGCTGCAACACTGGGCTTGGCTTACATGTCCAAGGCTCATGGGATC
 TTGGGGAGACAACGACGTTGTGACCGAAACACGAATGTACAGGTTCCGAGTACCC

 3481 AspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSer
 GATCCTAACATCAGGACCGGGGTGAGAACAAATTACCAACTGGCAGCCCCATCACGTACTCC
 CTAGGATTGAGTCCTGGCCCACCTTGTAAATGGTACCGTCGGGTAGTGCATGAGG

 3541 ThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIle
 ACCTACGGCAAGTTCTGCGACGGCGGGGTGCTCGGGGGCGCTTATGACATAATAATT
 TGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACTGTATTATAA

 3601 CysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAsp
 TGTGACGAGTGCCACTCCACGGATGCCACATCCATCTGGGATCGGCACGTGCCTTGAC
 ACAGTGCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGCCGTGACAGGAAC

FIG. 54E

GlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySer
3661 CAAGCAGAGACTGCGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTCC
GTTCGTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGGTGGGAGGCCCCGAGG

ValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIlePro
3721 GTCACTGTGCCCATCCAAACATCGAGGAGGGTTGCTCTGTCACCACCGGAGAGATCCT
CAGTGACACGGGGTAGGGTTGAGCTCCTCCAACGAGACAGGTGGTGGCCTCTAGGGA

PheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCys
3781 TTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTCTGT
AAAATGCCGTTCCGATAAGGGGGAGCTTCATTAGTCCCCCTCTGTAGAGTAGAACACA

HisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAla
3841 CATCAAAGAAGAAGTGCAGAACACTGCCGAAAGCTGGTCGATTGGGCATCAATGCC
GTAAGTTCTCTCACGCTGCTTGAGCGCGTTGACCGTAACCGTAGTTACGG

ValAlaTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValVal
3901 GTGGCCTACTACCGCGGTCTTGACGTGTCGTCATCCGACCAGCGCGATGTTGTCGTC
CACCGGATGATGGCGCCAGAAGTGCACAGGAGTAGGGCTGGTCGCCGCTACAACAGCAG

ValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCys
3961 GTGGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTGATAGACTGC
CACCGTTGGCTACGGAGTACTGGCGATATGGCGCTGAAGCTGAGCCACTATCTGACG

AsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThr
4021 AATACGTGTGTCACCCAGACAGTCGATTCAGCCTTGACCCCTACCTCACCATGGAGACA
TTATGCACACAGTGGTCTGTCAGCTAAAGTCGGAACCTGGGATGGAAGTGGTAACCTGT

IleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGly
4081 ATCACGCTCCCCCAGGATGCTGTCCTCGCACTCAACGTCGGGGCAGGACTGGCAGGGGG
TAGTGCAGGGGGGTCTACGACAGAGGGCGTGAGTTGAGCAGCCCCGTCCTGACCGTCCCC

LysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSer
4141 AAGCCAGGCATCTACAGATTGTCGGCACCGGGGAGCGCCCCTCCGGCATGTTGACTCG
TTGGTCCGTAGATGTCATAACACCCTGGCCCCCTCGGGGGAGGCCGTACAAGCTGAGC

SerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGlu
4201 TCCGTCCTCTGTGAGTGTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCGCCAG
AGGAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCAGGGCGGCTC

ThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHis
4261 ACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGCTCCCGTGTGCCAGGACCAT
TGATGTCATCCGATGCTCGCATGTTGAGTGGGGCCCCGAAGGGCACACGGTCTGGTA

LeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSer
4321 CTTGAATTGGGAGGGCGTCTTACAGGCCACTCATATAGATGCCACTTCTATCC
GAACCTAAACCCCTCCCGCAGAAATGTCGGAGTGAGTATATCTACGGGTGAAAGATAGG

GlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
4381 CAGACAAAGCAGAGTGGGAGAACCTCTTACCTGGTAGCGTACCAAGCCACCGTGTG
GTCTGTTCTCACCCCTTGGAAAGGAATGGACCATCGATGGTCGGTGGCACACG

AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
4441 GCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCAAGATGTGGAAGTGTGATTGCC
CGATCCCAGGTTGGGGAGGGGTAGCACCCCTGGTCTACACCTCACAAACTAACGGAG

LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
4501 AAGCCCACCCCTCCATGGGCAACACCCCTGCTATACAGACTGGCGCTGTTAGAATGAA
TCGGGGTGGGAGGTACCCGGTTGTTGAGTATGTCTGACCCGCGACAAGTCTTACTT

IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
4561 ATCACCCCTGACGCACCCAGTCACCAAATACATCATGACATGCGGCGACCTGGAG
TAGTGGGACTGCGTGGGTCAAGTGGTTATGTAGTACTGTACGTACGCCGCTGGACCTC

ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaTyrCys
4621 GTCGTCACGAGCACCTGGGTGCTCGTTGGCGCGTCCGGCTGCTTGGCCCGTATTG
CAGCAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGGCGATAACG

FIG. 54F

LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
4681 CTGTCAACAGGGCTGCGTGGTCATAGTGGGCAGGGTCGCTTGTCGGGAAGCCGGCAATC
GACAGTTGTCGACGCCAGTATCACCCGTCAGCAGAACAGGCCCTCGGCCGTTAG

IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
4741 ATACCTGACAGGGAAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCAC
TATGGACTGTCCTTCAGGAGATGGCTCTAAGCTACTCTACCTCTCACGAGAGTCGTG

LeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
4801 TTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTCAAGCAGAACAGGCCCTCGGC
AATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTGTCTTCCGGGAGCCG

LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAspTrp
4861 CTCTGCAGACCGCGTCCGTCAGGCAGAGGTTATGCCCTGCTGTCCAGACCAACTGG
GAGGACGTCTGGCGCAGGGCAGTCGTCATAAGCAGGGGACGACAGGTCTGGTTGACC

GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyr
4921 CAAAAAACTCGAGACCTCTGGCGAAGCATAATGTTGAACTTCATCAGTGGATAACAATAC
GTTTTGAGCTCTGGAAAGACCCGCTCGTATACACCTGAAGTAGTCACCCATTGTTATG

LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
4981 TTGGCGGGCTTGTCAACGCTGCCCTGGTAACCCCGCATTGCTTCATTGATGGCTTTACA
AACCGCCCGAACAGTTGCGACGGACCATTGGGCGGTAACGAAGTAACCGAAAATGT

AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
5041 GCTGCTGTCACCAGCCCCTAACCAACTAGCCAAACCCCTCTTCACATATTGGGGGGG
CGACGACAGTGGTCGGGTGATTGGTGATGGTTGGAGGAGAAGTTGTATAACCCCCCCC

TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
5101 TGGGTGGCTGCCAGCTGCCGCCGGCTGCGCTACTGCCTTGTGGCGCTGGCTTA
ACCCACCGACGGGTCGAGCGGGCGGGCCACGGCGATGACGGAAACACCCGCGACCGAAT

AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
5161 GCTGGCGCCGCCATCGGCAGTGTGGACTGGGAAGGTCTCATAGACATCCTGCAGGG
CGACCGCGCGGGTAGCCGTACAACCTGACCCCTCCAGGAGTATCTGTAGGAACGTCCC

TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
5221 TATGGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCC
ATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGG

SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
5281 TCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCGGAGCCCTCGTAGTC
AGGTGCCTCTGGACCAGTTAGATGACGGCGGTAGGAGAGCAGGGCCTCGGGAGCATCAG

GlyValValCysAlaAlaIleLeuArgARgHisValGlyProGlyGluGlyAlaValGln
5341 GGC GTGGTCTGTGCAAGCAAATCTGCGCCGGCACGTTGGCCGGCAGGGGGCAGTGCAG
CCGCACCAAGACACGTCGTTATGACGCCGGCGTGCAACCGGGCCGCTCCCCCGTCACGTC

TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyr
5401 TGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAAACCATGTTCCCCACGCACTAC
ACCTACTTGGCCGACTATCGGAAGCGGGAGGGCCCCCTGGTACAAAGGGGTGCGTGATG

ValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThr
5461 GTGCCGGAGAGCGATGCGAGCTGCCCGTCACTGCCATACTCAGCAGCCTCACTGTAACC
CACGGCCTCTCGTACGTCGACGGCGCAGTGCAGGTATGAGTCGCGGAGTGACATTGG

GlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGly
5521 CAGCTCTGAGGGCGACTGCACCAAGTGGATAAGCTGGAGTGTACCAACTCCATGCTCCGGT
GTCGAGGACTCCGCTGACGTGGTACCTATTGAGCCTCACATGGTGAGGTACGAGGCCA

SerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrp
5581 TCCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGGAGCAGCTTAAGACCTGG
AGGACCGATTCCCTGTAGACCCCTGACCTATACTGCTCCACAACTCGCTGAAATTCTGGACC

LeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGly
5641 CTAAAAGCTAACGCTCATGCCACAGCTGCCCTGGATCCCTTGTGTCCTGCCAGCGCGGG
GATTTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGGCC

FIG. 54G

TyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGlu
5701 TATAAGGGGGCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAG
ATATTCCCCAGACCCTCACCTGCCGTAGTACGTGTAGCGACGGTGACACCTCGACTC

IleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsn
5761 ATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGCTCTAGGACCTGCAGGAAC
TAGTGACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCTTG

MetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuPro
5821 ATGTGGAGTGGGACCTTCCCCATTAAATGCCTACACCACGGGCCCCCTGTACCCCCCTCCT
TACACCTCACCTGGAGGGTAATTACGGATGTGGTCCCAGGGACATGGGGGGAGGA

AlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArg
5881 GCGCCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGG
CGCGGCTTGATGTGCAAGCGCGATACCTCCACAGACGTCTCCTTACACCTCTATTCC

GlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCys
5941 CAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTGC
GTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTACGGGCACG

GlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAla
6001 CAGGTCCCCTCGCCCGAATTTCACAGAATTGGACGGGTGCGCCTACATAGGTTGCG
GTCCAGGGTAGCGGGCTTAAAAAGTGTCTAACCTGCCACGCGGATGTATCCAACGC

ProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyr
6061 CCCCCCTGCAAGCCCTTGCTGCGAGGGAGGTATCATTAGAGTAGGACTCCACGAATAC
GGGGGGACGTTGGAAACGACGCCCTCCTCATAGTAAGTCTCATCCTGAGGTGCTTATG

ProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMet
6121 CCGGTAGGGTCGCAATTACCTTGCGAGGCCGAACGGACGTGGCGTGTGACGTCCATG
GGCCATCCCAGCGTTAATGAAACGCTCGGGCTTGGCCTGCACCGGCACAACGTCAGGTAC

LeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySer
6181 CTCACTGATCCCTCCCATATAACAGCAGAGGGCGGCCGGCGAAGGTTGGCGAGGGGATCA
GAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCGCTTCAACCGCTCCCTAGT

ProProSerValAlaSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThr
6241 CCCCCCTCTGGCCAGCTCTCGGCTAGCAGCTATCCGCTCCATCTCAAGGCAACT
GGGGGGAGACACCGGTGAGGAGCCGATGGTCGATAGGCAGGGTAGAGAGTTCCGTTGA

CysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArg
6301 TGCAACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAGG
ACGTGGCGATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCC

GlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAsp
6361 CAGGAGATGGCGGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGGAC
GTCTCTACCGCCGTTGAGTGGTCCCAACTCAGTCTTGTGTTACCAACTAAGACCTG

SerPheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIle
6421 TCCTTCGATCCGCTTGTGGCGAGGAGGACGGAGCAGCGGGAGATCTCCGTACCCGCAGAAATC
AGGAAGCTAGCGAACACCGCCTCCTGCTGCCCTCTAGAGGCATGGCGTCTTAG

LeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsn
6481 CTGCGGAAGTCTCGGAGATTGCCCCAGGCCCTGCCGTTGGCGCGCCGGACTATAAC
GACGCCCTCAGAGCCTAAGCGGGTCCGGGACGGGCAAACCGCGCCGGCTGATATTG

ProProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCys
6541 CCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACTGTGGTCATGGCTGT
GGGGCGATACCTCTGACCTTTGGGCTATGCTTGGTGGACACCCAGGTACCGACA

ProLeuProProProLysSerProProValProProProArgLysLysArgThrValVal
6601 CCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCCTCGGAAGAACGGACGGTGGTC
GGCGAAGGTGGAGGTTCAAGGGAGGACACGGAGGCGAGCCTTTCGCCTGCCACCAG

LeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySer
6661 CTCACTGAATCAACCTATCTACTGCTTGGCCGAGCTCGCCACCAAGAAGCTTGGCAGC
GAGTGACTTAGTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTCGAAACCGTCG

FIG. 54H

SerSerThrSerGlyIleThrGlyAspAsnThrThrSerSerGluProAlaProSer
6721 TCCTCAACTTCCGGCATTACGGGCACAATACGACAACATCCTCTGAGCCGCCCTCT
AGGAGTTGAAGGCCGTAATGCCGCTTTATGCTGTTAGGAGACTCGGGCGGGGAAGA
GlyCysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGlu
6781 GGCTGCCCCCCCAGCTCCGACGCTGAGTCCTATTCCCATGCCCTGGAGGGGGAG
CCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGACCTCCCCCTC
ProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAla
6841 CCTGGGGATCCGGATCTTAGCGACGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCG
GGACCCCTAGGCCTAGAATCGCTGCCAGTACCAAGTGCAGTCATCACTCCGGTTGCGC
GluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCys
6901 GAGGATGTCGTGCTGCTCAATGCTTACTCTGGACAGGCGACTCGTCACCCCGTGC
CTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCGCGTGAGCAGTGGGCACG
AlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHis
6961 GCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCAACCAC
CGCGCCTTCTTGTCTTGACGGTAGTTACGTGATTGTTGAGCAACGATGCACTGGTG
AsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysValThrPhe
7021 AATTGGTGTATTCCACACCTCACGCAGTGCCTGCCAAAGGCAGAACGAAAGTCACATT
TTAAACCACATAAGGTGGTAGTGCACGAAACGGTTCCGTCTTCAGTGTAAA
AspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAla
7081 GACAGACTGCAAGTTCTGGACAGGCCATTACCAAGGACGTACTCAAGGAGGTTAAAGCAGCG
CTGTCGACGTTCAAGACCTGTCGTAATGGCCTGTCATGAGTCTCCCAATTTCGTCGC
AlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProPro
7141 GCGTCAAAAGTGAAGGCTAACCTGCTATCCGTAGAGGAAGCTTGACGCGTACGCCCCCA
CGCAGTTTCACTCCGATTGAACGATAGGCATCTCCTCGAACGTCGGACTGCGGGGGT
HisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLys
7201 CACTCAGCCAATCCAAGTTGGTTATGGGGCAAAAGACGTCGTTGCCATGCCAGAAAAG
GTGAGTCGGTTAGGTTCAAACCAAATACCCGTTCTGCAAGGCAACGGTACGGTCTTC
AlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIle
7261 GCGCTAACCCACATCAACTCCGTGTTGGAAAGACCTCTGGAAGACAAATGTAACACCAAATA
CGGCATTGGGTGTTAGGTTGAGGCAACACCTTCTGGAAGACCTTCTGTTACATTGTGGTTAT
AspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArg
7321 GACACTACCATCATGGCTAACGAGGTTTCTGCGTCAGCCTGAGAAGGGGGTCGT
CTGTGATGGTAGTACCGATTCTGCTCCAAAGACGCAAGTCGGACTCTCCCCCAGCA
LysProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAla
7381 AAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCGTGCCTGCGAAAGATGGCT
TTCGGTCGAGCAGAGTAGCACAAGGGCTAGACCCGCACCGCACACGTTCTACCGA
LeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGln
7441 TTGTACGACGTGGTTACAAAGCTCCCTGGCGTGTGGAAAGCTCCTACGGATTCCAA
AACATGCTGACCAATGTTGAGGGAAACCGGCACCTTCGAGGATGCCATAAGGTT
TyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrPro
7501 TACTCACCAGGACAGCAGGGTTGAATTCTCGTGCAGCGTGGAAAGTCCAAGAAAACCCCA
ATGAGTGGTCTGTCGCCAACCTAAGGAGCACGTTGCACCTCAGGTTCTGGGGT
MetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArg
7561 ATGGGGTTCTCGTATGATACCCGCTGCTTGTACTCCACAGTCAGTGAGAGCGACATCCG
TACCCCAAGAGCATACTATGGGCACGAAACTGAGGTGTCAGTGCACCTCGCTGTAGGCA
ThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLys
7621 ACGGAGGAGGGCAATCTACCAATGTTGACCTCGACCCCCAAGCCCGTGGCCATCAAG
TGCTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGTTCGGCGCACCGGTAGTTC
SerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCys
7681 TCCCTCACCGAGAGGCTTATGTTGGGGCCCTCTTACCAATTCAAGGGGGAGAACTGC
AGGAGTGGCTCTCGAAATAACCCCCGGGAGAATGGTTAAGTCCCCCTTGTACG

FIG. 54I

7741 GlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThr
GGCTATCGCAGGTGCCGCGAGCGGGCGTACTGACAACTAGCTGTGGTAACACCCTCACT
CCGATAGCGTCCACGGCGCGTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGA

7801 CysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeu
TGCTACATCAAGGCCGGGCAGCTGTCGAGCCGAGGGCTCCAGGACTGCACCATGCTC
ACGATGTAGTTCCGGGCCCCGTCGGACAGCTGGCGTCCCAGGTCCTGACGTGGTACGAG

7861 ValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGCG
CACACACCGCTGCTGAATCAGCAATAGACACTTCGCGCCCCCAGGTCCCTGCGCCGC

7921 SerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProPro
AGCCTGAGAGGCCCTCACGGAGGGCTATGACCAAGGTACTCCGCCCCCTGGGGACCCCCA
TCGGACTCTCGGAAGTGCCTCCGATACTGGTCATGAGGCGGGGGACCCCTGGGGGT

7981 GlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHis
CAACCAGAACATCGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCCAC
GTTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTGACAGTCAGCGGGTG

8041 AspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArg
GACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCCTACAACCCCCCTCGCGAGA
CTGCCGCGACCTTCTCCAGATGATGGAGTGGGACTGGGATGTTGGGGAGCGCTCT

8101 AlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMet
GCTGCGTGGGAGACAGCAAGACACACTCCAGTCATTCCGGTAGGCAACATAATCATG
CGACGCACCCCTGTCGTTCTGTGAGGTAGTTAAGGACCGATCCGTTGATTAGTAC

8161 PheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIle
TTTGCACACTGTGGCGAGGATGATACTGATGACCCATTCTTAGCGTCCTTATA
AACGGGGGTGTGACACCCGCTCTACTATGACTACTGGTAAAGAAATCGCAGGAATAT

8221 AlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIle
GCCAGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCATA
CGGCCCTGGTCGAACATTGTCGGGAGCTAACGCTCTAGATGCCCGACGATGAGGTAT

8281 GluProLeuAspLeuProProIleIleGlnArgLeu
GAACCACCTGATCTACCTCCAATCATTCAAAGACTC
CTTGGTGAACAGATGGAGGTTAGTAAGTTCTGAG

FIG. 55A

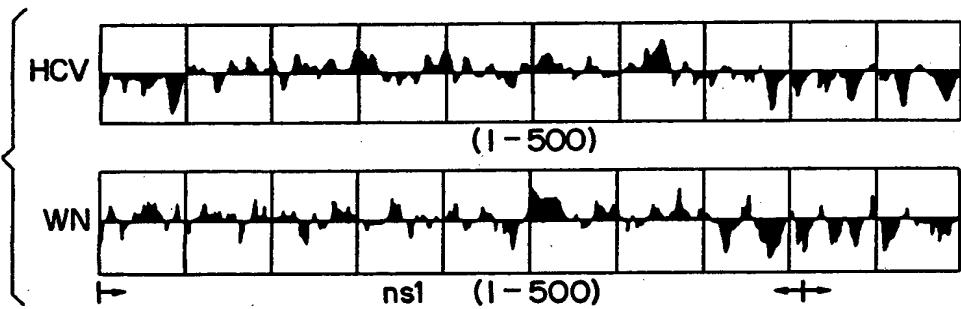


FIG. 55B

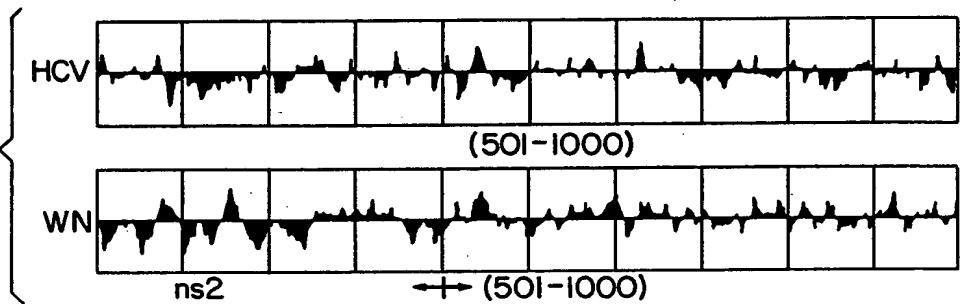


FIG. 55C

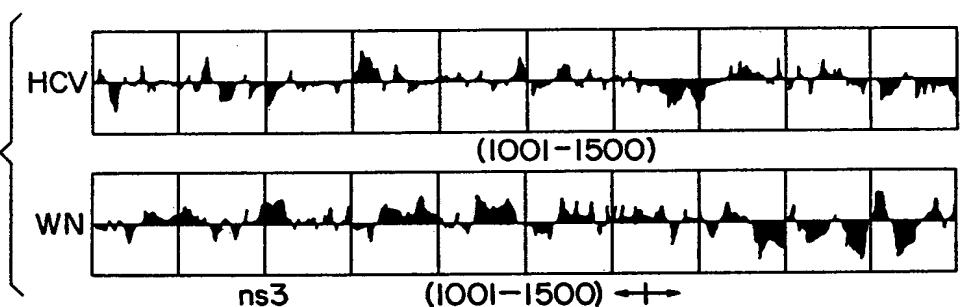


FIG. 55D

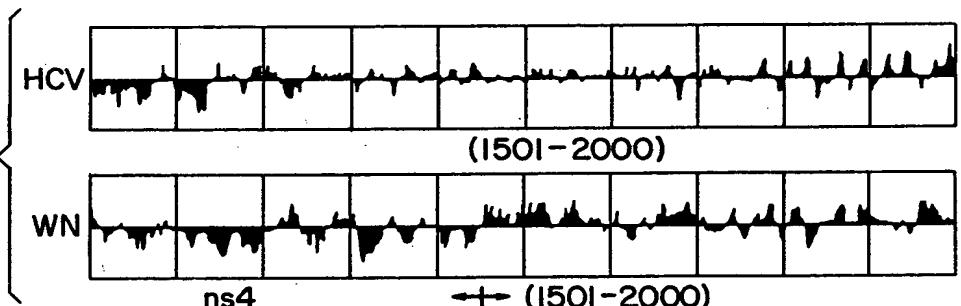


FIG. 55E

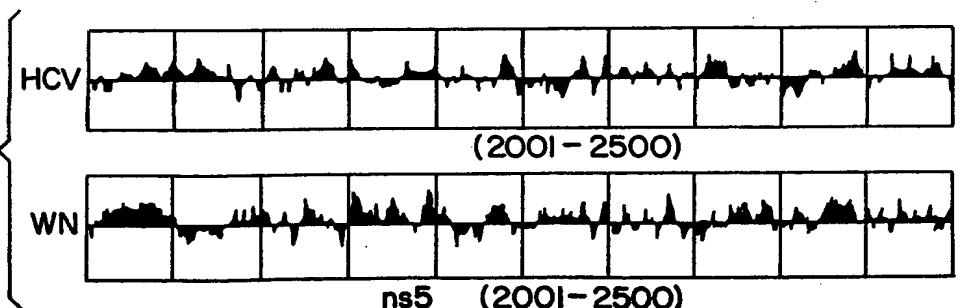


FIG. 56

Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp
1 CCCGGCGTAGGTGGCAATTGGTAAGGTCAATCCGATAACCTTACGTGGCTTCGCCG
GGCCGCATCCAGCGGTTAACCCATTCCAGTGCATGGAAATGCCACGCCGAAGGGC

Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu Gly Gly Ala Ala Arg Ala Leu Ala
61 ACCTCATGGGTACATACCGCTCGTCCGCCTCTGGAGGGCTGCCAGGGCCCTGG
TGGAGTACCCCATGTTATGGCAGGCCGGAGAACCTCCGGACGGTCCGGACC

His Gly Val Arg Val Leu Glu Asp Glu Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys
121 GGCATGGCGTCCGGTTCTGGAAGACGGCGTGAACATATGCCAACAGGGAACCTTCCCTGGTT
GGTACCCGAGGCCAAGACCTTCTGCCGACTTGATACGTTGTCCTGGAAAGGACCAA

Ser Phe Ser Ile Phe Leu Ala Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Tyr
181 GCTCTTCTATCTCCCTCTGGCCCTGCTCTGGCTTGAAC TGCCCCGTTGGCCT
CGAGAAAGAGATAAGGAAGACGGGACGGAGAACGAACTGACACGGCGAAGCCGGA

-----overlap with CA167b-----

Gln Val Arg Asn Ser Thr Glu Val Thr Asn Asp Cys Pro Asn Ser Ser Ile
241 ACCAAGTGGCAACTCCACGGGCTTACACGTCACCAATGATTGCCCTAACTCGAGTA
TGGTTCACGGGTGAGGTGCCCGAAATGGTAGGTACTAACGGGATGAGCTCAT

Val Tyr Glu Ala Ala Asp Ala Ile Leu His Thr Pro Gly Cys Val Arg Glu
301 TTGTGTACGAAGGGCGATGCCATCCTGCACACTCCGGGTGCGTCCCTTGCGTTGCG
AACACATGCTCGCCGGCTACGGTAGGTACGGTACTAACGGGATGGGAAACGCAAGCAC

Gly Asn Ala Ser Arg Cys Trp Val Ala Met Thr Pro Thr Val Ala
361 AGGGCAACGGCTCGAGGTGGTGGCATGCCATGCCCTACGGTGGCC
TCCCGTTGGGAGCTCCACAACCCACCGCTACTGGGGATGGCACCGG

1	LysAsnLysArgAsnThrAsnArgProGlnAspVallysPheProGlyGlyGly		
61	AAAAAAACAAACGTAACCAACCGTCCGCCACAGGACGTCAGTTCCGGGTGGCG GTCAGATCGTTGGAGTTACTTTGCCCCGAGGGGGCTAGATTGGGTGTGGCG CAGTCTAGCAACCACCTCAAATGAACAAACGGGGTCCCCGGGATCTAACCCACACGGC	GlnIleValGlyGlyValItyLeuLeuProArgArgGlyProArgLeuGlyValArgAla ThrArgLysThrSerGluIargSerGlnProArgGlyArgArgGlnProIleProIysAla	
121	CGACGAGAAAGACTTCCGAGGGTCCGCAACCTCGAGGTAGACGCCAGGCC GCTGGCTCTTCTGAAGGCTGCCAGCGTTGGAGCTCCATCTGGCTCGGATAGGGTIC ArgArgProGluIugGlyArgThrTrpAlaGlnProGlyItyPrOrtpProIeutyrglyAsn		
181	CTCGTGGCCGAGGGCAGGACCTGGCTCAGCCCCGGTACCCCTCTATGGCA GAGCAGCCGGGTCCCCGTCTGGACCCGAGTCGGGCCATGGGAACCGGGAGATAACCGT	GluGlyCysGlyTrpAlaIaglyTrpLeuLeuSerProArgGlySerArgProSerIrpGly	
241	ATGAGGGCTGCGGGTAGGGCTCTGTCTCCCCTGGGCTCTGGCCTAGCTGGG TACTCCCGACGCCAACCGGGCTACCGAGGACAGGGCACAGGGCACAGGG		
301	ProThrAspProArgArgSerArgAsnIleuglyLysValIleAspThrLeuThrCys GCCCCACAGACCCCCGGCGTAGGTGGCAATTGGTAAAGTCATCGATAACCCCTTAAGCT		
361	CGGGGTGTGGGGGGCCGATCCAGGGCTGGAGTACCCCATGATGGCAGGG GGCGAAGGGCTGGAGTACCCCATGATGGCAGGGCAAGAACCTTGACITGATACTGGTCCCT	GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla ArgAlaLeuAlaHisGlyValArgValleLeuGluAspGlyValAsnTyraIaThrGlyAsn	
421	CGAGGGCCCTGGCCGACCTCATGGGTTACATACCGCTCGTCCGGGGCTCTGGAAAGACGGCT GGTCCCCGGACCGGGTACCCGAGGGCAAGAACCTTGACITGATACTGGTCCCT	LeuProGlyCysSerPheSerPheSerPhe ACCTTCCTGGTGTCTTCTACCTTC TGGAAAGGACCAACCGAGAACAGATGGAA	FIG. 57

FIG. 57

FIG. 58A

#MetSerValValGlnProProGlyProProLeu

1 CGCAGAAAGCGTCTAGCCATGGCGTTAGTATGAGTGTCTGCAGGCCCTCCAGGACCCCC
GGTCTTTCGCAAGATCGTACCGCAATCATACTCACAGCACGTCGGAGGTCTGGGGGG
ProGlyGluProAM

61 TCCCGGGAGAGCCATAGTGGTCTGGGAACCGGTGAGTACACCGGAATTGCCAGGACGAC
AGGGCCCTCTCGGTATCACCAGACGCCACTCATGGCCTTAACGTCCTGCT
#MetProGlyAspLeuGlyValProProGlnAsp

121 CGGGTCCTTCTGGATCAACCCGCTCAATGCCTGGAGATTGGCGTGCCCCGGCAAGA
GCCCAAGAAAGAACCTAGTTGGCGAGTTACGGACCTCTAAACCCGACGGGGGTCT
OP AM GlyAlaCys
CysAM *

181 CTGCTAGCCGAGTAGTGTGGTGGCGAAAGGCCCTTGTGGTACTGGCTGATAAGGGTGTCT
GACGATGGCTCATCACAAACCCAGCGCTTCCGGAACACCATGACGGACTATCCCACGAA
GluCysProGlyArgSerArgProCysThrMetSerThrAsnProLysProGlnLys

FIG. 58B

241 GCGAGTCCCCGGGAGGTCTCTAGACCCATGAGCACGAATCCTAACCTCAA
CGCTCACGGGGCCCTCCAGAGCATCTGGCACGTGGTACTCGTGCTTAGGATTGGAGTT
LysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGlyGln

301 AAAAAACAAACGTAACACCAACCGTCGCCACAGGACGTCAAAGTTCCGGTGGCGTC
TTTTTGTGATGTGGTGGCAGGGTGCAGTTCAAGGCCACCGCCAG

IleValGlyGlyValTyrIleLeuProArgArgGlyProArgLeuGlyValArgAlaThr

361 AGATCGTTGGAGTTACTTGTGCCAGGGGCCCTAGATTGGGTGTTGGCGCGA
TCTAGCAACCACCTCAAATGAACAACGGCGCTCCCGGATCTAACCCACACGGCGCCT

ArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLeuAlaArg

421 CGAGAAAGACTTCCGAGGGTCCGCAACCTCGAGGTAGACGTCAGCCATATCCCACGGCTC
GCTCTTCTGAAGGCTGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAGGGTTCCGAG

ArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsnGlu

481 GTCGGCCGAGGGCAGGACCTGGCTCAAGCCCCGGTACCCCTTGCCCCATGGAAACGGGAGATAACCGTTAC
 CAGCCGGGCTCCCGTGGACCCGAGTCGGGCCATTGGAGATACCGTAC
 GlyCysGlyTrpAlaGlyTrpLeuSerProArgGlySerArgProSerTrpGlyPro

541 AGGGCTGGGGATGGCTCCGTGCTCCGGCTCTGGCTCTGGCTAGCTGGGCC
 TCCCCGACGCCACCCGGCCATTACCGAGGGACAGAGGGCACCCGAGGCCC
 ThrAspProArgArgSerArgAsnLeuGlyLysValleAspThrLeuThrCysGly

601 CCACAGACCCCCGGCGTAGGTCGGCAATTGGTAAGGTATCGATAACCCTTACGTGCG
 GGTGTCTGGGGCCGCATCCAGGGCGTTAAACCCATTCCAGTAGCTATGGAAATGCACGC

Phe

661 GCTTC
 CGAAG

- * = Start of long HCV ORF
- | = Putative first amino acid of large HCV polyprotein
- # = Putative small encoded peptides (that may play a translational regulatory role)

FIG. 58C

FIG. 59

ValLeuGlyArgGluArgProCysGlyThrAlaOP AM GLYAlaCysGluCysProGly
GTCTTGCGTGGCTTAAAGGCCCTGGTACTGCCTGATAAGGGTACGGCTTGCAGTCGGCTCACGGGGCC
CAGAACCCAGCGCCTTCGGAACACCATGACGGACTATCCCACGAACGCTCACGGGGCC

*
1 ArgSerArgArgProCysThrMetSerThrAsnProLysProGlnArgLysThrLysArg
61 AGGTCTCGTAGACCCGTCGACCATGAGCACGAATCCTAAACCTCAAAAGAAAAACCAAACGTT
TCCAGAGCATCTGGCACGCTGGTACTCGTGCCTAGGATTGGAGTTCTTTGGTTTGCA

AsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGlnIleValGlyGly
121 AACACCAACCGTCCGGTCAAGTGTCAAGGACGTCAGTGTCCCTGCAGTTCAAGGGCCACCGCCAGTCAACCACCT

ValTyrLeuProArgArgGlyProArgLeuGlyValArgAlaThrArgLysThrSer
181 GTTTACTTGTGCCCCGAGGGGCCCTAGATTGGGTGTCAGCTCAAGTGTCCGGATCTAACCACAGGGTTCGAAGG
CAAATGAAACAACGGGGTCCCGGGATCTAACCACAGGGGTTCGAAGG
overlap with CA290a
241 GluArgSerGlnProArgArgGlnProLysAlaArgArgProGluGly
GAGCGGTGCAAC CCTCGAGGTAGACGTCAAGCTCAGCTCGTCAAGGCTCGTGGCTCGAGC
CTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAAGGGTCCGAGCAGCCGGCTCCG
301 ArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrglyAsnGluGlyCys
AGGACCTGGCTCAGGCCCGGTACCCCTCTGGCAATGGCAATGAGGGCTGCG
TCCTGGACCCGAGTCGGGCCATGGGAACCGGGAGATACCGTACTTCGGACCC
* = putative initiator methionine codon

FIG. 60

#ProProOP
#SerThrMetAsnHisSerProValArgAsnTyrCysLeuHisAlaGluSerValAM
#LeuHisGluSerLeuProCysGluGluIleLeuSerSerArgArgLysArgLeuAla
CTCCACCATGAATCACTCCCCCTGTGAGGAACACTACTGTCTCACGGAGAAAGCGTCTAGCC
GAGGTGGTACTTAGTGAGGGACACTCCTGTGATGACAAGTGCGTCTTCGAGATCGG

#MetSerValValGlnProProGlyProLeuProProGlyGluProAM
MetAlaLeuValOP
61 ATGGCGTTAGTATGAGTGTGAGCTTGAGGACCCCCCTCCGGAGAGGCCATAGT
TACCGCAATCATACTCACAGCACGGTGGAGGTCTGGAGGTCTGGTATCA

121 GGTCTGGAAACCGGTGAGTACACCGGAATTGCCAGGACGGACCCGGTCCCTTCTTGGATC
CCAGACGCCCTTGGCCACTCATGTGGCTTAACGGTCTGGCCAGGAAAGAACCTAG
-----overlap with ag30a-----
#MetProGlyAspLeuGlyValProProGlnAspCysAM
181 AACCCGGCTCAATGGCTGGAGATTGGCGTGGCTGGCAAGAACGACTGCTAGCCGAGTAGTGT
TGGGGCGAGTTACGGACCTCTAAACCCGCAACGGGGCGTTCTGACGATGGCTCATCACA

OP AM GlyAlaCysGluCysProGlyArgSer
241 TGGGTGGCGAAAGGCCTTGTGGTACTGCCTGATAGGGTGGCTTGCGAGTGGCCGGAGGT
ACCCAGGGCTTTCGGAACACCATGACGGACTATCCCACGAACGCTCACGGGGCCCTCCA

ArgArg
301 CTCGTAGA
GAGGCATCT

* = Start of long HCV ORF
= Putative small encoded peptides (that may
play a translational regulatory role)

FIG. 61

Overlap with 15e

Gly Ala Cys Tyr Ser Ile Glu Pro Pro Leu Asp Leu Pro Pro Leu Ile Gln Arg Leu His Gly
1 GGG CCT GCT ACT CCAT AGA ACC ACT GG AT CT AC CT CC AA AT CA T CA A AG A CT CC AT GG C
CCCC GG AC GA CG AT GA GG TA T CT GG GT GA CCT AG AT GG AG GT TA G TAG TA AG TT CT GAG GT AC CG

Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala Ala Cys
61 CTC AGG GC AT TT CA CT CC AC AG T TA CT CCA GGT GAA ATT A AT AG GT GG CC GG CA T GC
GAG T CCG CG TA AA AG T GAG GT GT CA AT GAG AG GT CC ACT TT AA TT AT CCC ACC GG CG TA CG

Gly*
G

Ile Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Ile Cys Gly Lys Tyr Ile Phe Asn Trp
121 CTC AGA AAA ACT TT GGG GT ACC GG CCT T GCG AG AC CCG GG AC AC C G CCT CT G G C G
GAG T CTT TT GAA ACC CC AT GG CG GG A AC G G C T CG A AC C T CT G G C G
Ala Arg Leu Ile Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Ile Phe Asn Trp
181 GCT AGG CCT TT CT GG CC AG AG G AG G C AG G G C T G CC AT AT G TG G CA AG T AC C T C T C A A C T G
CG AT CC GA AG ACC GG T CT CC CG T C C G T C C C G A C C G G T A T A C C C G T C A T G G A A G T T G A C C

Ala Val Arg Thr Lys Leu Lys
241 G CAG TA AG A A C C A A A G C T C A A A C
C G T C A T T C T G T T C G A G T T G

* = nucleotide heterogeneity

FIG. 62A

CACTCCACCATGAATCACTCCCCTGTGAGGAACACTGTCTTCACGCAGAAAGCGTAG
CCATGGCGTTAGTATGAGTGTGCGTCAGCCTCAGGACCCCCCTCCCGGGAGAGCCATA
GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTCTTGG
TCAACCCGCTCAATGCCCTGGAGATTGGCGTCCCCCGCAAGACTGCTAGCCGAGTAGT
GTTGGGTCGCGAAAGGCCTTGTGGTACTGCCGTAGGGTGCTGCGAGTGCCCCGGGAG-300

---(Putative initiator methionine codon)
GTCTCGTAGACCGTGCACCATGAGCACGAATCTAACCTCAAAAAAAAACAAACGTAA
CACCAACCGTCGCCACAGGACGTCAAGTCCGGGTGGCGGTAGATCGTTGGTGGAGT
TTACTTGTGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGGAGAAAGACTCCGA
GCGGTGCAACCTCGAGGTAGACGTCAAGCCTATCCCCAAGGCTCGTGGCCCGAGGGCAG
GACCTGGGCTCAGCCCAGGGTACCCCTGGCCCTATGGCAATGAGGGCTGCGGGTGGG-600
GGGATGGCTCCTGTCCTCCCGTGGCTCTGGCCTAGCTGGGGCCCCACAGACCCCCGGCG
TAGGTCGCGCAATTGGTAAGGTATCGATACCCCTACGTGCGGCTTCGCCGACCTCAT
GGGGTACATACCGCTCGTGGCGCCCTCTTGGAGGGCGTGCCAGGGCCCTGGCGCATGG
CGTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGGAACCTCCTGGTTGCTCTT
CTCTATCTCCTCTGGCCCTGCTCTTGACTGTGCCCCGCTTGGCCTACCAAGT-900
GCGCAACTCCACGGGCTTACACGTACCAATGATTGCCCTAACCGAGTATTGTGTA
CGAGGCGGCCGATGCCATCCTGCAACACTCCGGGTGCGTCCCTTGCCTGAGGGCAA
CGCCTCGAGGTGTTGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCC
CGCGACGCGAGCTTGCACGTACATCGATCTGCTTGTGCGGAGCGGCCACCCCTGTTGGC
CCTCTACGTGGGGACCTATGCGGCTGCTCTTGTGCGCCAACGTGTTCACCTCTC-1200
TCCCAGGCGCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCAGGCCATATAAC
GGGTACCGCATGGCATGGGATATGATGATGAACTGGTCCCTACGACGGCGTTGGTAAT
GGCTCAGCTGCTCCGGATCCACAAGGCATCTTGGACATGATCGCTGGTGCCTACTGGGG
AGTCCTGGCGGGCATAGCGTATTCTCATGGTGGGGAACTGGGCGAAGGTCCTGGTAGT
GCTGCTGCTATTGCCGGCGTCGACGCGGAAACCCACGTACCGGGGGAAAGTGCCGGCCA-1500
CACTGTGCTGGATTGTTAGCCTCGCACCAAGGCCCTGAACTGCAATGATAGCCTCAA
CACCGGCTGGTTGGCAGGGCTTCTATCACCAAGTCAACTCTCAGGCTGCTCTGA
GAGGCTAGCCAGCTGCCGACCCCTACCGATTITGACCAAGGGCTGGGGCCCTATCAGTTA
TGCCAACGGAAGCGGCCCGACCAGCGCCCTACTGCTGGCACTACCCCCCAAAACCTTG-1800
CGGTATTGTGCCCCGCGAAGAGTGTGTTGGTCCGGTATATTGCTTCACTCCCAGCCCCGT
GGTGGTGGGAACGACCGACAGGTGGCGCGCCACCTACAGCTGGGGTAAAATGATAC
GGACGTCTCGTCCTTAACAATACCAAGGCCACCGCTGGCAATTGGTTCGGTTGACCTG
GATGAACACTGAGATTACCAAAAGTGTGCGGAGCGCCCTTGTGTCATCGGAGGGC
GGGCAACACACCCCTGCACTGCCCAACTGATTGCTCCGCAAGCATCCGGACGCCACATA-2100
CTCTCGGTGCGGCCCTGGATCACACCCAGGTGCTGGTCAACTACCGTATAG
GCTTTGGCATTATCTTGTACCATCAACTACACCATATTAAAATCAGGATGATCGTGGG
AGGGGTGAAACACAGGCTGGAGCTGCGCTGCAACTGGACGCGGGCGAACGTTGCGATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTACACAGTGGCAGGT
CCTCCCGTGTCCCTCACACCCCTACCAAGCCTGGCTCATCCACCTCCACCA-2400
GAACATTGGACGTGCAAGTACTTGTACGGGGTGGGTCAGCATCGCGTCTGGCCAT
TAACTGGGAGTACGTGCTTCTCTGTTCTGCTGCAAGCAGCGCGCTGTGCTCCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTGGAGAACCTGTAATACT
TAATGCGACATCCCTGGCGGGACGACGGTCTTGTATCCTTCTGTTCTGCTT
TGCGATGGTATTGAAGGTAAGTGGGTGCCCAGCGGTCTACACCTCTACGGGATGTG-2700
GCCTCTCCTCCTGCTCTGTTGGCGTGGCGGTTGTTCTGCTGGGTTGATGGCGCTGACTCTGTCACCCATA
GGCGCGTCGTGTGGCGGTTGTTCTGCTGGGTTGATGGCGCTGACTCTGTCACCCATA
TTACAAGCGCTATATCAGCTGGTCTGTTGCTGAGCTTCAAGTCCAGGGGGCGCAGCGCGTCA
AGCGCAACTGCACGTGGATTCCCCCTCAACGTCCAGGGGGGGCGCAGCGCGTCA
CTTACTCATGTGCTGTACACCCGACTCTGGTATTGACATCACCAAATTGCTGCTGGC-3000
CGTCTTGGACCCCTTGGATTCTTCAAGCCAGTTGCTTAAAGTACCCCTACTTGTGCG
CGTCCAAGGCCTTCTCGGTTCTGCGCGTTAGCGCGGAAGATGATGGAGGGCATTACGT
GCAAATGGTCATCATTAAAGTTAGGGCGCTACTGGCACCTATGTTATAACCATCTCAC
TCCTCTTGGGACTGGCGCACAAACGGCTTGCAGAGATCTGGCGTGGCTGTAGAGCCAGT
CGTCTTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGCAGG-3300
TGACATCATCAACGGCTTGCCTGTTCCGCCCCGAGGGGGCGGGAGATACTGCTCGGCC
AGCCGATGGAATGGTCTCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCA
GCAGACAAGGGGCCTCTAGGGTGCATAATCACCAAGCCTAACCTGGCCGGGACAAAAACCA
AGTGGAGGGTGGGTCCAGATTGTGTCACTGCTGCCAACCTTCTGGCAACGTGCAT

FIG. 62B

CAATGGGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCAA-3600
GGGTCTGTCACTCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCC
GCAAGGTAGCCGCTCATTGACACCCCTGCACTTGCAGGCTCCTCGGACCTTACCTGGTCAC
GAGGCACGCCGATGTCATTCCCGTGCAGCGGGGGGTGATAGCAGGGGCAGCCTGCTGTC
GCCCGGCCCTTCTACTTGAAAGCTCCTCGGGGGTCCGCTGTTGTGCCCCGCCGGG
GCACGCCGTGGCATATTAGGGCCGCGGTGTCACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCTGGCTACGGATAACTC
CTCTCCACCACTAGTAGTGCCCCAGAGCTTCAGGTGGCTCACCTCCATGCTCCCACAGGCAG
CGGCAAAAGCACCAAGGTCCCGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTCTGTTGTCACACTGGGCTTGGTGCCTACATGTCACGGCTATGGGAT
CGATCCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCACACGTACTC-4200
CACCTACGGCAAGTCCCTGCCGACGGCGGGTGCTCGGGGGCGCTTATGACATAATAAT
TTGTGACGAGTGCACCTCACGGATGCCACATCCATCTGGCATCGGCACTGTCTTGA
CCAAGCAGAGACTGCAGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTC
CGTCACTGTGCCCATCCCACATCGAGGAGGGTGCTCTGTCACCCGAGAGATCCC
TTTTACGGCAAGGCATCCCCCTCGAACAGTAATCAAGGGGGGAGACATCTCATCTTG-4500
TCATTCAAAGAAGAACGTGCGACGAACCTGCCGCAAAAGCTGGTCGATTGGCATCAATGC
CGTGGCCTACTACCGCGGTCTTGACGTGTCGCTACCCGACCGAGCGCGATGTTGTCGT
CGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCACCTCGACTCGGTGATAGACTG
CAATACGTGTGTCACCCAGACAGTCGATTCAAGCCTTGACCCCTACCTCACCAATTGAGAC
AATCACGCTCCCCCAGGATGCTGTCTCCGACTCAACGTCGGGCAGGACTGGCAGGGG-4800
GAAGCCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGCATGTTGACTC
GTCGTCCTCTGTGAGTGTATGACGCAAGCTGTGCTTGGTATGAGCTACGCCGCCGA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGCTTCCGTGTGCCAGGACCA
TCTTGAATTGGGAGGGCGCTTACAGGCCACTCATATAGATGCCACTTCTATC
CCAGACAAAGCAGAGTGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACAGATGTGGAAAGTGTGATTGCGCT
CAAGCCCCCCTCCATGGGCAACACCCCTGCTATACAGACTGGCGCTGTTCAGAACATGA
AATCACCCCTGACGCAACCCAGTCACCAAAATACATGACATGCGATGTCGGCGACCTGG
GGTCGTACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGCTTGGCGCGTATTG
CCTGTCAACAGGCTGGCTAGTGGCATAGTGGCAGGGCTGCTTGTCCGGGAAGCCGGCAAT-5400
CATACCTGACAGGGAAAGTCCTCTACCGAGAGTTGCGATGAGATGGAAGAGTGTCTCAGCA
CTTACCGTACATGAGCAAGGGATGATGCTGCCGAGCAGTTCAAGCAGAACGGCCCTCGG
CCTCCTGCAAGCCCGTCCCGTCAGGCAGAGGGTATCGCCCTGCTGTCAGAACACTG
GCAAAAACCTGAGACCTTCTGGGCGAACATATGTGGAACTTCATCAGTGGGATACAATA
CTTGGCGGGCTTGTCAACGCTGCCGTGTAACCCGCCATTGCTTCAATTGATGGCTTTAC-5700
AGCTGCTGTCAACAGGCCACTAACCAACTAGCCAAACCCCTCTTCACATATTGGGGGG
GTGGGTGGCTGCCAGCTGCCGCCCCCGGTGCGCTACTGCCTTGTGGCGCTGGCTT
AGCTGGCGCCGCCATCGGCAGTGTGGACTGGGAAGGTCCTCATAGACATCCTGCAAG
GTATGGCGGGGGCTGGCGGGAGCTTGTGGCATTCAGATCATGAGCGGTGAGGTCCC
CTCCACGGAGGGACCTGGTCAATCTACTGCCGCCATCCCTCGCCGGAGGCCCTCGTAGT-6000
CGGCCTGGCTGTGCAAGCAACTAGGCCGAGCACGTTGGCCGGAGGGGGCAGTGCA
GTGGATGAAACCGGCTGATAGCCTCGCCTCCGGGGGAAACCATGTTCCCCCACGCACTA
CGTGCCTGGAGAGCGATGCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCCTGAGGGGACTGCACCAAGTGGATAAGCTGGAGTGTACCAACTCATGCTCCGG
TTCCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGTTGAGCGACTTAAAGACCTG-6300

FIG. 62C

GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGATCCCTTGTGTCCTGCCAGCGCG
GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
GATCACTGGACATGTCAAAACGGGACGATGAGGATCGTCGGCTTAGGACCTGCAGGAA
CATGTGGAGTGGGACCTTCCCCATTAAATGCCTACACCACGGGCCCTGTACCCCCCTTCC
TGCGCCGAACTAACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG-6600
GCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTG
CCAGGTCCCCTCGCCGAATTTCACAGAATTGGACGGGTGCGCCTACATAGGTTTGC
GCCCTCTGCAAGCCCTTGCTCGGGAGGGTATCATTAGAGTAGGACTCCACGAATA
CCCGTAGGGTCGCAATTACCTTGCAGGCCAACGGACGTGGCGTGTGACGTCCAT
GCTCACTGATCCCTCCATATAACAGCAGAGGGCCGGCGAACGGTTGGCGAGGGGATC-6900
ACCCCCCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTAAGGCAAC
TTGCACCGCTAACCATGACTCCCTGATGCTGAGCTATAGAGGCCAACCTCCTATGGAG
GCAGGAGATGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGGA
CTCCTCGATCCGCTTGTGGCGAGGAGGACGAGCGGGAGATCTCCGTACCCGAGAAAT
CCTGCGGAAGTCTGGAGATTGCCTAGGCCCTGCCGTTGGCGCGCCGGACTATAA-7200
CCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCAACCTGTGGTCCATGGCTG
TCGCTTCACCTCAAAGTCCCTCCTGTGCCTCCGCTCGGAAGAACGGGACGGTGGT
CCTCACTGAATCAACCTATCTACTGCCTTGGCGAGCTGCCACAGAACGCTTGGCAG
CTCCTCAACTCCGCATTACGGGCAGAACATAGACAACATCCTCTGAGGCCGCCCCCTC
TGGCTGCCCCCCCGACTCCGACGCTGAGTCCTATTCCCTCATGCCCCCCCTGGAGGGGGA-7500
GCCTGGGGATCCGGATCTTAGCAGCGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGC
GGAGGATGTCGTGTGCTCAATGTCTTACTCTTGGACAGGGCGACTCGTCACCCCGTG
CGCCGCGGAAGAACAGAAACTGCCATCAATGCACTAACGCAACTCGTGTACGTACCA
CAATTGGTGTATTCCACCAACCTCACGCAGTGCTGCCAACAGGAGAACAGAACGTCACATT
TGACAGACTGCAAGTTCTGGACAGCATTACCAAGGACGTACTCAAGGAGGTTAACGCAGC-7800
GGCGTAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAAGCCTGACGCC
ACACTCAGCCAATCCAAGTTGGTTATGGGGAAAAGACGTCCTGGCATGCCAGAAA
GGCGTAAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAAGACAATGTAACACCAAT
AGACACTACCATCATGGCTAAGAACGAGGTTTCTGCGTTAGCCTGAGAACGGGGGTG
TAAGCCAGCTCGTCATCGTGTCCCCGATCTGGCGTGCCTGCGAAAGATGGC-8100
TTGTACGACGTGGTTACAAAGCTCCCTTGGCGTGTGGAAAGCTCTACGGATTCCA
ATACTCACCAAGGACAGCGGGTTGAATTCTCGTGCAGCGTGGAAAGTCCAAGAAAACCC
AATGGGGTTCTCGTATGATAACCGCTGTTGACTCCACAGTCACTGAGAGCGACATCCG
TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAACGCCGCTGGCCATCAA
GTCCTCACCGAGAGGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACGTG-8400
CGGCTATCGCAGGTGCCCGCGAGCGGGCTACTGACAACTAGCTGTGGTAACACCCCTCAC
TTGCTACATCAAGGCCGGGAGCCTGTCGAGCCGCAAGGGCTCCAGGACTGCACCATGCT
CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCC
GAGCCTGAGAGCCTTACGGAGGCTATGACCAAGGTACTCCGCCCTGGGACCCCC
ACAACCAGAACATGACTTGGAGCTACAAACATCATGCTCTCCAAACGTGTCAGTCGCCA-8700
CGACGGCGCTGGAAAGAGGGCTACTACCTCACCGTGACCCCTACAACCCCCCTCGCGAG
AGCTGCGTGGGAGACAGCAAGAACACACTCCAGTCATTCTGGCTAGGCAACATAATCAT
GTTTGCCTTACACTGTGGCGAGGATGATACTGATGACCCATTCTTGTGCTACTCCAT
AGCCAGGGGACCGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCAT
AGAACCACTTGTACCTCAATCATTCAAAAGACTCCATGGCCTCAGCGCATTTCAGTGGG-9000
CCACAGTTACTCTCAGGTGAAATTAAATAGGGTGGCCGATGCCCTCAGAAAACCTGGG
ACCGCCCTTGCAGCTGGAGACACCGGGCCGGAGCGTCCCGCAGTAGGCTTCTGGCAG
AGGAGGGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGCAGTAAGAACAAAGCT
CAAAC

FIG. 62D

1 CACTCCACCATGAATCACTCCCCTGTGAGGAACACTGTCTTCAGCAGAAAGCGTCTAG
GTGAGGTGGTACTTAGTGAGGGACACTCCTGATGACAGAAGTGCCTTCAGATC
61 CCATGGCGTTAGTATGAGTGTGCGCAGCCTCCAGGACCCCCCTCCCGGGAGAGCCATA
GGTACCGCAATCATACTCACAGCACGTCGGAGGTCTGGGGGGAGGGCCCTCTCGGTAT
121 GTGGTCTGCGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCCTTCTTGA
CACCAAGACGCCTGGCCACTCATGTGGCCTTAACGGTCTGCTGGCCAGGAAAGAACCT
181 TCAACCCGCTCAATGCCTGGAGATTGGCGTCCCCCGCAAGACTGCTAGCCGAGTAGT
AGTTGGCGAGTTACGGACCTCTAAACCCGACGGGGCGTTCTGACGATCGGCTCATCA
241 GTTGGGTGCGAACAGGCCTTGTGGTACTGCCTGATAGGGTGTGCGAGTGCAGGGAG
CAACCCAGCGCTTCCGGAACACCATGACGGACTATCCCACGAACGCTCACGGGGCCCTC
301 GTCTCGTAGACCGTGACCATGAGCACGAATCTAAACCTAAAAAAAAACAAACGTAA
CAGAGCATCTGGCACGTGGTACTCGTCTAGGATTGGAGTTTTTTGTTGCATT
361 CACCAACCGTCGCCAACAGGACGTCAGTTCCGGGTGGCGGTAGATCGTTGGTGGAGT
GTGGTGGCAGCGGGTGTCTGCAAGGGCCCACCGCCAGTCTAGCAACCACCTCA
421 TTACTTGTGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGCAGAAAAGACTTCCGA
AATGAACAACGGCGCGTCCCCGGGATCTAACCCACACGCGCGTGTCTTCTGAAGGCT
481 GCGGTGCGAACCTCGAGGTAGACGTCAGCCTATCCCCAAGGCTGTCGGCCGAGGGCAG
CGCCAGCGTTGGAGCTCCATCTGCACTGGATAGGGTTCGAGCAGCCGGCTCCGTC
541 GACCTGGGCTCAGCCGGTACCCCTGGCCCCCTATGGCAATGAGGGCTGCGGGTGGC
CTGGACCCGAGTCGGGCCATGGGAACCGGGGAGATACCGTTACTCCGACGCCACCCG
601 GGGATGGCTCCTGTCTCCCCTGGCTCTCGGCCAGCTGGGGCCCCACAGACCCCCGGCG
CCCTACCGAGGACAGAGGGCACCGAGAGCCGGATCGACCCGGGTGTCTGGGGCCGC
661 TAGGTGCGCGCAATTGGTAAGGTATCGATACCCCTACGTGCGGCTTCGCCGACCTCAT
ATCCAGCGCGTAAACCCATTCCAGTAGCTATGGGAATGCAACGCCAGCGGCTGGAGTA
721 GGGGTACATACCGCTCGTCGGGCCCTTGGAGGCCTGCCAGGGCCCTGGCGCATGG
CCCCATGTATGGCGAGCAGCCGCGGGAGAACCTCCGCGACGGTCCGGGACCGCGTACC
781 CGTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGGAACCTTCTGGTTGCTCTT
GCAGGCCAAGACCTTCTGCCGCACTTGATACGTTGCTTGGAGGACCAACGAGAAA
841 CTCTATCTTCTTCTGCCCTGCTCTTGTACTGTGCCCCTCGGCCTACCAAGT
GAGATAGAAGGAAGACCGGGACGAGAGAACGAACTGACACGGCGAAGCCGGATGGTTCA
901 GCGCAACTCCACGGGGCTTACCAACGTCACCAATGATTGCCCTACTCGAGTATTGTGA
CGCGTTGAGGTGCCCGAAATGGTGCACTGGTTACTAACGGGATTGAGCTATAACACAT
961 CGAGGGCGCCGATGCCATCCTGCACACTCCGGGGTGCCTCCCTGCGTTGTGAGGGCAA
GCTCCGCCGGCTACGGTAGGACGTTGAGGCCACGCAGGGAACGCAAGCAACTCCGTT
1021 CGCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAAGGGATGGCAAACCTCC
GCGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGGTGGTCCCTACCGTTGAGGG
1081 CGCGACGCAGCTCGACGTCACATCGATCTGCTGTGCGGGAGCGCCACCCCTGTTGGC
GCGCTGCGTCGAAGCTGCAGTGTAGCTAGACGAACAGCCCTCGCGGTGGAGACAGCCG
1141 CCTCTACGTGGGGGACCTATGCGGGCTGTCTTCTTGCGGCCAACTGTTCACCTCTC
GGAGATGCAACCCCTGGATACGCCAGACAGAAAGAACAGCCGGTGTACAAGTGGAGAG
1201 TCCCAGGGGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATATAAC
AGGGTCCGCGGTGACCTGCTGCGTTCAACGTTAACGAGATAGATAGGGCCGGTATATTG
1261 GGATCACCGCATGGCATGGATATGATGAACTGGTCCCCCTACGACGGCGTTGGTAAT

FIG. 62E

1321 GGCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGCCTCACTGGGG
CCGAGTCGACGAGGCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCC
1381 AGTCTGGCGGGCATAGCGTATTTCTCCATGGTGGGAACTGGGCGAAGGTCTGGTAGT
TCAGGACCGCCCGTATCGATAAAGAGGTACCAACCCCTGACCCGCTTCAGGACCATCA
1441 GCTGCTGCTATTGCCGGCGTCACGCGGAAACCCACGTACCCGGGGAAAGTGCCTGGCG
CGACGACGATAAACGGCCGAGCTGCCTTGGGTGAGTGGCCCCCTCACGGCCGGT
1501 CACTGTGTCTGGATTTGTTAGCCTCCTCGCACCAAGGCAGCAAGCAGAACGTCCAGCTGAT
GTGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGGGTTCTGCAAGGTGACTA
1561 CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACGTCAATGATAGCCTCAA
GTTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCTGGACTTGACGTTACTATCGGAGTT
1621 CACCGGCTGGTGGCAGGGCTTTCTATCACCAAGTTCAACTCTTCAGGCTGTCCCTGA
GTGGCCGACCAACCGTCCCAGAAAGATAGTGGTGTCAAGTTGAGAAGTCCGACAGGACT
1681 GAGGCTAGCCAGCTGCCGACCCCTTACCGATTTGACCAAGGGCTGGGGCCCTATCAGTTA
CTCCGATCGGTGACGGCTGGGAATGGCTAAAACGTTCCGACCCCGGGATAGTCAT
1741 TGCCAACGGAAGCGGCCCGACCAGCGCCCTACTGCTGGCACTACCCCCCAGACCTTG
ACGGTTGCCCTCGCCGGGGCTGGTCGCGGGGATGACGACCGTGATGGGGGTTTGGAAC
1801 CGGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCGT
GCCATAACACGGCGCTTCTCACACACACCAGGCCATATAACGAAGTGAGGGTCGGGGCA
1861 GGTGGTGGGAACGACCGACAGGTGGCGCGCCACCTACAGCTGGGTGAAAATGATAC
CCACCAACCTTGCTGGCTGTCCAGCCCCGGGGTGGATGTCGACCCACTTTACTATG
1921 GGACGTCTCGCTTAACAATACCAAGGCCACCGCTGGCAATTGGTCTGGTTGACCTG
CCTGCAGAACGAGGAATTGTTATGGTCCGGTGGGACCCGTTAACCAAGCCAACATGGAC
1981 GATGAACACTGATTACCAAAAGTGTGGAGCGCCTCCTGTGTACGGAGGGGC
CTACTTGAGTTGACCTAAGTGGTTACACGCCCTCGCGGGAGAACACAGTAGCCTCCCCG
2041 GGGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATA
CCGTTGTTGGACGTGACGGGGTACTAACGAAGGCCCTGAGGGCTGATGGCCTGGGTAT
2101 CTCTCGGTGCCGCTCCGGCTGGATCACACCCAGGTGCCTGGTCGACTACCCGTATAG
GAGAGCCACGCCAGGGACCTAGTGTGGTCCACGGACAGCTGATGGCATATTC
2161 GCTTGGCATTATCCTGTACCATCAACTACACCATATTTAAATCAGGATGTACGTGGG
CGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTAGTCCTACATGCACCC
2221 AGGGGTCGAACACAGGCTGGAGCTGCCGCAACTGGACGCCGGCGAACGTTGCGATCT
TCCCCAGCTTGTCCGACCTCGACGGACGTTGACCTGCGCCCCGTTGCAACGCTAGA
2281 GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCAACTACACAGTGGCAGGT
CCTTCTGCTCCGTCCAGGCTCGAGTCGGGCAATGACGACTGGTATGTGTCACCGTCCA
2341 CCTCCCGTCTTCAACACCTACCAAGCCTGTCCACCGGCCCTCATCCACCTCCACCA
GGAGGGCACAAGGAAGTGTGGATGGTCGGAACAGGTGGCCGGAGTAGGTGGAGGTGGT
2401 GAACATTGTGGACGTGCACTTGTACGGGGTGGGTCAAGCATCGCTCTGGCCAT
CTTGTAAACACCTGACGTATGAACATGCCCAACCCAGTTGTAGCGCAGGACCCGGTA
2461 TAAGTGGGAGTACGTGTTCTCCTGTTCTGTGCTTGCAGACGCGCGCGTCTGCTCCTG
ATTCAACCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCGACGAGGAC
2521 CTTGTGGATGATGCTACTCATATCCAAGCGGGAGGCGGCTTGGAGAACCTCGTAATACT
GAACACCTACTACGATGAGTATAGGGTTGCCCTCGCCGAAACCTTGGAGCATTATGA
2581 TAATGCAGCATCCCTGGCCGGACGCACGGTCTGTATCCTCCTCGTGTCTCTGCTT

FIG. 62F

2641 TGCATGGTATTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTTACGGGATGTG
ACGTACCATAAACTTCCCATTCAACCACGGGCCTGCCAGATGTGGAAGATGCCCTACAC
2701 GCCTCCTCCTGCTCCTGTTGGCGTTGCCCGAGCGGGCGTACGCGCTGGACACGGAGGT
CGGAGAGGAGGACGAGGACAACCGCAACGGGTCGCCGCATGCGCACCTGTGCCTCCA
2761 GGCCGCGTCGTGTGGCGGTGTTCTCGTCGGTTGATGGCGCTGACTCTGTACCCATA
CCGGCGCAGCACCCGCCACAACAAGAGCAGCCAACTACCGCAGACTGAGACAGTGGTAT
2821 TTACAAGCGCTATATCAGCTGGTGCTTGTGGCTTCACTTGTGCTGCTGACCAAGAGTGGA
AATGTTCGCGATATAGTCGACCAACCGAACACCACCGAAGTCATAAAAGACTGGTCTCACCT
2881 AGCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGCGCGACGCCGTCA
TCGCGTTACGTGACACCTAACGGGGAGTTGCAGGCTCCCCCGCGCTGCCAGTA
2941 CTTACTCATGTGTGCTGTACACCCACTCTGGTATTTGACATCACCAAATTGCTGCTGGC
GAATGAGTACACACGACATGTGGCTGAGACCATAACTGTAGTGGTTAACGACGACCG
3001 CGTCTCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTACCCACTTTGTGCG
GCAGAACGCTGGGAAACCTAACAGAGTTCGGTAAACGAATTCTATGGGATGAAACACGC
3061 CGTCCAAGGCCTTCTCGGTTCTGCGCGTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAGGTTCCCGGAAGAGGCCAACGCGCAATCGGCCCTACTAGCCTCCGTAATGCA
3121 GCAAATGGTCATCATTAAGTTAGGGCGCTACTGGCACCTATGTTATAACCACATCTCAC
CGTTTACCACTAGTAATTCAATCCCCCGAATGACCGTGGATACAAATATTGGTAGAGTG
3181 TCCTCTCGGGACTGGCGCACAACGGCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGT
AGGAGAACCCCTGACCCCGGTGTTGCCAACGCTCTAGACCGGACCGACATCTGGTCA
3241 CGTCTCTCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGC
GCAGAACAGGGTTTACCTCTGGTTGAGTAGTGCACCCCCCGTCTATGGCGGCCACGCC
3301 TGACATCATCAACGGCTTGCCTGTTCCGCCGCAGGGGCCGGAGATACTGCTCGGGC
ACTGTAGTAGTTGCCAACGGACAAAGGCGGGCGTCCCCGGCCCTATGACGAGCCCG
3361 AGCCGATGGAATGGTCTCAAGGGGTGGAGGGTGTGGCGCCCATCACGGCGTACGCCA
TCGGCTACCTTACCAAGAGGTTCCCCACCTCCAACGACCCGGGGTAGTCCGATGCC
3421 GCAGACAAGGGGCCTCTAGGGTGATAATCACCAAGCTAACTGGCCGGGACAAAAACCA
CGTCTGTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGGCCCTGTTTGGT
3481 AGTGGAGGGTGGACTGTCAACTGCTGCCAACCTCCTGGCAACGTGCAT
TCACCTCCACTCCAGGTCTAACACAGTTGACGACGGGTTGGAAAGGACCGTTGACGTA
3541 CAATGGGGTGTGCTGGACTGTCTACCACGGGGCGGAACGAGGACCATCGCGTACCCAA
GTTACCCACACGACCTGACAGATGGTCCCCGGCTTGCTCTGGTAGCCGAGTGGTT
3601 GGGTCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCC
CCCAGGACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAAACACCGACCGGGCGAGG
3661 GCAAGGTAGCCGCTATTGACACCCCTGCACTGCGGCTCCTCGGACCTTACCTGGTCA
GCTTCATCGGCCAGTAACCTGTTGGACGTGAACGCCGAGGAGCCTGGAAATGGACAGTG
3721 GAGGCACGCCGATGTCACTTCCGTGCGCCGGCGGGGTGATAGCAGGGGAGCCTGCTGTC
CTCGTGCCTACAGTAAGGGCACGCCAGGCCACTATCGTCCCCGTGGACGACAG
3781 GCCCCGGCCCATTCCTACTTGAAAGGCTCTGGGGGTCCGCTGTTGTGCCCCGCC
CGGGGGCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCAGAACACGGGGCGCC
3841 GCACGCCGTGGGCATATTAGGGCCGCGGTGTGCAACCGTGGAGTGGCTAAGGCC
CGTGCAGGCCACCGTATAAAATCCCGGCCACACGTGGCACCTCACCGATTCCGCCACCT
3901 CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTACGGATAACTC

FIG. 62G

3961 CTCTCCACCAAGTAGTGCCTCAGAGCTTCAGGTGGCTCACCTCATGCTCCCACAGGCAG
GAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTC
4021 CGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
GCCGTTTCGTGGTCCAGGGCCGACGTATACGTCGAGTCCCATAATTCCACGATCATGA
4081 CAACCCCTCTGTTGCTGCAACACTGGGCTTGGTCTTACATGTCCAAGGCTATGGGAT
GTTGGGAGACAACGACGTTGTGACCGAAACCACGAATGTACAGGTTCCGAGTACCCCTA
4141 CGATCCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCATACGTACTC
GCTAGGATTGTAGTCCTGCCACTCTGTTAATGGTGACCGTCGGGTAGTGCATGAG
4201 CACCTACGGCAAGTTCTTGCGACGGCGGGTGCTCGGGGGCGCTTATGACATAATAAT
GTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACTGTATTATTA
4261 TTGTGACGAGTGCACACTCACGGATGCCACATCCATCTTGGGCATCGGCACGTGCCTGAA
AACACTGCTCACGGTGAGGTGCCTACGGTAGGTAGAACCCGTAGCCGTACAGGAAC
4321 CCAAGCAGAGACTGCAGGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTC
GGTCGTCTCTGACGCCCGCTCTGACCAAACACGAGCGGTGGCGGTGGGGAGGCCCGAG
4381 CGTCACTGTGCCCATCCAACATCGAGGAGGTTGCTCTGTCACCACCGGAGAGATCCC
GCAGTGACACGGGGTAGGGTTGAGCTCCTCAACGAGACAGGTGGTGGCCTCTAGGG
4441 TTTTACGGCAAGGCTATCCCCCTGAAAGTAATCAAGGGGGGAGACATCTCATCTTCTG
AAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTCCCCCTCTGTAGAGTAGAACAGAC
4501 TCATTCAAAGAAGAAGTGCAGCAACTCGCCGAAAGCTGGTCGCATTGGGCATCAATGC
AGTAAGTTCTTCTTCACGCTGCTTGAGCGGGCTTCGACCAGCGTAACCCGTAGTTACG
4561 CGTGGCCTACTACCGCGGTCTTGACGTGTCGTATCCCACCGAGCGGCATGTTGCGT
GCACCGGATGATGGCGCCAGAACTGCACAGGAGTAGGGCTGGTCGCCGCTACAACAGCA
4621 CGTGGCAACCAGTGCCTCATGACCGGCTATACCGGCACCTCGACTCGGTGATAGACTG
GCACCGTTGGCTACGGGAGTACTGGCGATATGGCGCTGAAGCTGAGCCACTATCTGAC
4681 CAATACGTGTGTCACCCAGACAGTCGATTTCAGCCTGACCCCTACCTTACCAATTGAGAC
GTTATGCACACAGTGGGCTGTCAGCTAAAGTCGGAACGGATGGAGTGGTAACCTCTG
4741 AATCACGCTCCCCCAGGATGCTGTCCTCGACTCAACGTGGGGCAGGACTGGCAGGGG
TTAGTGCAGGGGGTCTACGACAGAGGGCGTAGTTGCAAGCCCCGTCCTGACCGTCCCC
4801 GAAGCCAGGCATCTACAGATTTGTCGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTC
CTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAG
4861 GTCCGTCCCTGTGAGTGTATGACCGCAGGCTGTGCTTGGTATGAGCTACGCCGCCGA
CAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCAACTCGAGTGCAGGGCGCT
4921 GACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGTGTGCCAGGACCA
CTGATGTCAATCCGATGCTCGCATGTAATTGTTGGGGCCCCGAAGGGCACACGGTCTGGT
4981 TCTTGAATTTGGGAGGGCGTCTTACAGGCCTCACTCATATAGATGCCACTTTCTATC
AGAACTTAAACCCCTCCGAGAAATGTCCGGAGTGAAGTATATCTACGGGTGAAAGATAG
5041 CCAGACAAAGCAGAGTGGGGAGAACCTTCCCTACCTGGTAGCGTACCAAGCCACCGTGTG
GGTCTGTTCGTCTCACCCCTTGGAGGAATGGACCATCGCATGGTGGCGACAC
5101 CGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCAAGATGTGGAAGTGTGTTGATTG
GCGATCCGAGTTGGGGAGGGTAGCACCTGGTCTACACCTTACAAACTAAGCGGA
5161 CAAGCCCACCCCTCCATGGGCAACACCCCTGCTATACAGACTGGGCCTGTTCAGAATGA
GTTGGGTGGGAGGTACCCGGTTGTTGGGGACGATATGTCTGACCCCGACAAGTCTTACT
5221 AATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCTGGCCGACCTGGA

FIG. 62H

5281 GGTGTCACGAGCACCTGGGTGCTCGTGGCGCGTCTGGCTGCTTGGCCCGTATTG
CCAGCAGTGCTCGTGGACCCACGAGCAACCGCCAGGACCGACGAAACCGGCATAAC
5341 CCTGTCAACAGGGCTCGTGGTCAATAGTGGCAGGGTGTCTGTCCGGGAAGCCGGCAAT
GGACAGTTGTCCGACGCACCAAGTATCACCCGTCCCAGCAGAACAGGCCCTCGGCCGTTA
5401 CATACTGACAGGGAAAGTCCTTACCGAGAGTTGATGAGATGGAAGAGTGCTCTCAGCA
GTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGTACTCTACCTTCTCACGAGAGTCGT
5461 CTTACCGTACATCGAGCAAGGGATGATGCTGCCAGCAGTTCAAGCAGAACGCCCTCGG
GAATGGCATGTAGCTCGTCCCTACTACGAGCGCTCGTCAAGTTCGTCTCCGGGAGCC
5521 CCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATGCCCTGCTGTCCAGACCAACTG
GGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGAC
5581 GCAAAAAACTCGAGACCTTCTGGCGAAGCATATGTGGAACTTCATCAGTGGGATAACAATA
CGTTTTGAGCTTGGAAAGACCCGTTCTGATAACACCTGAAGTAGTCACCCATGTTAT
5641 CTTGGCGGGCTGTCAACGCTGCCCTGGTAACCCGCCATTGCTTCATTGATGGCTTTAC
GAACCGCCCGAACAGTTGCGACGGACCTGGGGCGGTAAACGAAGTAACCGAAAATG
5701 AGCTGCTGTACCAAGCCCACTAACCACTAGCCAACCCCTCTTCAACATATTGGGGG
TCGACGACAGTGGTCGGGTATTGGTATCGGTTGGGAGGAGAAGTTGTATAACCCCCC
5761 GTGGGTGGCTGCCAGCTGCCGCCGGTGCGCTACTGCCCTTGTGGCGCTGGCTT
CACCCACCGACGGGTGAGCGGGGGCCACGGCGATGACGGAAACACCCCGGACCGAA
5821 AGCTGGCGCCGCCATGGCAGTGTGGACTGGGAAGGTCTCATAGACATCCTGCAGG
TCGACCGCGGGTAGCCGTACAACCTGACCCCTCCAGGAGTATCTGTAGGAACGTCC
5881 GTATGGCGCGGGCTGGCAGCTCTGGCAATCTACTGCCGCCATCTCTGCCGGAGCCCTCGTAGT
CATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTGCCACTCCAGGG
5941 CTCCACGGAGGACCTGGCAATCTACTGCCGCCATCTCTGCCGGAGCCCTCGTAGT
GAGGTGCCTCCTGGACCAAGTTAGATGACGGCGGTAGGAGAGCGGGCTGGGAGCATCA
6001 CGGCGTGGCTGTGCAGCAATACTGCGCCGGCACGTTGGCCGGCGAGGGGGCAGTGC
GCCGACCAAGACACGTCGTTATGACCGCGGTGCAACCGGGCCGTCCCCGTACG
6061 GTGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAACCATGTTCCCCACGCACTA
CACCTACTTGGCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGGGTGCCTGAT
6121 CGTGGCGAGAGCGATGCGACTGCCCGCTACTGCCATACTCAGCAGCCTCACTGTAAC
GCACGGCCTCTCGTACGTCGACGGCGCAGTGAAGGTATGAGTCGTCGGAGTGACATTG
6181 CCAGCTCTGAGGCGACTGCACCAAGTGGATAAGCTGGAGTGTACCACTCCATGCTCCGG
GGTCGAGGACTCCGCTGACGTGGTACCTATTGAGCCTCACATGGTAGGTACGAGGCC
6241 TTCCGGCTAACGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTAAAGACCTG
AAGGACCGATTCCCTGTAGACCCGTACCTATACTCGCTCCACAACCTCGCTGAAATTCTGGAC
6301 GCTAAAAGCTAACGCTCATGCCACAGCTGCCCTGGATCCCTTGTCTGCCAGCGCGG
CGATTTCGATTGAGTACGGTGTGACGGACCCCTAGGGAAACACAGGACGGTCGCGCC
6361 GTATAAGGGGGCTGGCGAGTGGACGGCATCATGCAACACTCGCTGCCACTGTGGAGCTGA
CATATTCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACT
6421 GATCACTGGACATGTCAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAA
CTAGTGACCTGTACAGTTTGCCTGCTACTCCTAGCAGCCAGGATCTGGACGTCCTT
6481 CATGTGGAGTGGGACCTTCCCCATTAATGCCACACCAAGGGCCCTGTACCCCCCTTCC
GTACACCTCACCTGGAAAGGGTAATTACGGATGTGGTGCCGGGACATGGGGGGAAAGG
6541 TGCGCCGAACACTACACGTTCGCGCTATGGAGGGTGTCTGAGAGGAATATGTGGAGATAAG

FIG. 62I

6601 GCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CGTCCACCCCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTACGGGCAC
6661 CCAGGTCCCATGCCGAATTTCACAGAATTGGACGGGTGCGCCTACATAGGTTGC
GGTCCAGGGTAGCGGGCTTAAAAGTGTCTAACCTGCCACGGATGTATCCAACG
6721 GCCCCCTGCAAGCCCTGCTGCCGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
CGGGGGGACGTTGGAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTGCTTAT
6781 CCCGGTAGGGTCGCAATTACCTTGCAGGCCGAACCGGACGTGGCGTGGACGTCCAT
GGGCCATCCCAGCGTTAATGGAACGCTGCCCTCCATAGTAAGTCTCATCCTGAGGTGCTTAT
6841 GCTCACTGATCCCTCCCATAAACAGCAGAGGCAGGCCGGCGAAGGTTGGCGAGGGATC
CGAGTGAATAGGGAGGTATATTGTCGCTCCGCCGGCCGCTTCAACCCTCCCTAG
6901 ACCCCCCCTGTGGCCAGCTCCTGGCTAGCCAGCTATCCGCTCATCTCAAGGCAAC
TGGGGGGAGACACCGGTCGAGGAGCCATGGTCGATAGGCAGGTAGAGAGTTCCGTTG
6961 TTGCACCGCTAACATGACTCCCTGATGCTGAGCTATAGAGGCCAACCTCCTATGGAG
AACGTGGCGATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGTTGGAGGGATAACCTC
7021 GCAGGAGATGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGA
CGTCCTCTACCCGCCGTTGAGTGGTCCAACTCAGTCTTGTTCACCAACTAAGACCT
7081 CTCCTCGATCCGTTGTGGCGAGGAGGACGAGCAGGGAGATCTCGTACCCGAGAAAT
GAGGAAGCTAGGCAGACACCGCCTCCCTGCTGCCCTCTAGAGGCATGGCGTCTTAA
7141 CCTGCGGAAGTCTGGAGATTGCCAGGCCAGGGCCCTGCCGTTGGCGCGCCGGACTATAA
GGACGCCCTCAGAGCCTAAGCGGGTCCGGACGGCAAACCCGCGCCGGCTGATATT
7201 CCCCCCGCTAGTGGAGACGTGGAAAAAGCCCAGTACGAACCACTGTGGTCCATGGCTG
GGGGGGCGATCACCTCTGCACCTTTTGGCTGATGCTTGGTGACACCAGGTACCGAC
7261 TCCGCTTCCACCTCAAAGTCCCCTCCTGTGCCCTCGCCTCGGAAGAACGGGACGGTGGT
AGGCAGAGGTGGAGGTTCAAGGGAGGACACGGAGGCGAGCCTTCTGCCACCA
7321 CCTCACTGAATCAACCCATCTACTGCTTGGCCAGCAGCTCGCCACCAGAACGCTTGGCAG
GGAGTGAATTGGATAGATGACGGAACCGCTGAGCGGTGGCTTCGAAACCGTC
7381 CTCCTCAACTCCGGCATTACGGCGACAATACGACAACATCCTCTGAGCCGCCCTTC
GAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGACTCGGGCGGGGAAG
7441 TGGCTCCCCCCCAGCTCGACGCTGAGTCCTATTCTCCATGCCCGGGCTGGAGGGGGA
ACCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGACCTCCCCCT
7501 GCCTGGGGATCCGGATCTTAGCGACGGGTATGGCAACGGTCAGTAGTGAGGCCAACGC
CGGACCCCTAGGCCTAGAATCGCTGCCAGTACAGTTGCCAGTCATCACTCCGGTTGCG
7561 GGAGGATGTCGTGCTGCTCAATGCTTACTCTTGGACAGGGCAGCTCGTCACCCGTG
CCTCCTACAGCACGACGAGTTACAGAACATGAGAACCTGTCGCGTGGAGCAGTGGGGCAC
7621 CGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAACGCAACTCGTGTACGTACCA
CGGGCGCCTTCTGTCTTGACGGTAGTTACGTGATTGAGCAACGATGCACTGGT
7681 CAATTGGTGTATTCCACCAACCTCACGCAGTGTGCTGCCAAAGGAGCAAGAACGAC
GTTAAACACATAAGGTGGTGGAGTGCCTCACGAACGGTTCCGCTTCTTCACTGGTAA
7741 TGACAGACTGCAAGTTCTGGACAGCATTACCAAGGACGTACTCAAGGAGGTAAAGCAGC
ACTGTCGACGTTCAAGACCTGTCGTTAATGGCCTGCTGAGTGTGAGCAACGATGCACTGGT
7801 GGCCTCAAAAGTGAAGGCTAACCTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCC
CCGCAGTTTCACTCCGATTGAACGATAGGCATCTCCCTGAAACGTCGGACTGC
7861 ACACCTCAGCCAATCCAAGTTGGTTATGGGGCAAAAGACGTCGTTGCCATGCCAGAAA

FIG. 62J

7921 GGCGTAACCCACATCAACTCCGTGGAAAGACCTCTGGAAGACAATGTAACACCAAT
CCGGCATTGGGTGAGTTGAGGCACACCTTCTGGAAGACCTCTGTTACATTGTGGTTA
7981 AGACACTACCACATGGCTAAGAACGAGGTTTCTGCGTTAGCCTGAGAAGGGGGTCG
TCTGTATGGTAGTACCGATTCTGCTCAAAGACGCAAGTCGGACTCTCCCCCAGC
8041 TAAGCCAGCTGCTCATCGTGTCCCCGATCTGGCGTGCCTGCGAAAAGATGGC
ATTCGGTGAGCAGAGTAGCACAAGGGGCTAGACCCGACGCGCACACGCTTTCTACCG
8101 TTTGTACGACGTGGTTACAAAGCTCCCTGGCGTGTGGAAAGCTCTACGGATTCCA
AAACATGCTGCACCAATGTTGAGGGGAACCGGACTACCCCTGAGGATGCCTAAGGT
8161 ATACTCACCAGGACAGCGGGTTGAATTCTCGTGCAAGCGTGGAAAGTCCAAGAAAACCC
TATGAGTGGTCTGCGCCAACTTAAGGAGCACGTTGACCTCAGGTTCTTTGGGG
8221 AATGGGGTTCTCGTATGATAACCGCTGCTTGAECTCCACAGTCAGTGAGAGCGACATCCG
TTACCCAAAGAGCATACTATGGGCACGAAACTGAGGTGTCAGTGACTCTGCTGTAGGC
8281 TACGGAGGAGGCAATCTACCAATGTTGTGACCTGACCCCCAAGCCCGCGTGGCCATCAA
ATGCCCTCCCGTTAGATGGTTACAACACTGGAGCTGGGGGTCGGCGCACCGTAGTT
8341 GTCCCTCACCGAGAGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACCTG
CAGGGAGTGGCTCTCGAAATAACACCCCCGGGAGAATGGTTAAGTTCCCCCTTGTAC
8401 CGGCTATCGCAGGTGCCCGCGAGCGGGCTACTGACAACTAGCTGTGGTAACACCCCTCAC
GCCGATAGCGTCCACGGCGCGCTCGCCGATGACTGTTGATCGACACCATTGTGGGAGTG
8461 TTGCTACATCAAGGCCCGGGCAGCTGAGCCGAGGGCTCCAGGACTGCACCATGCT
AACGATGTAGTTCCGGGCCCCTCGGACAGCTCGCGTCCGAGGTCTGACGTGGTACGA
8521 CGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGTCAGGAGGACGCGGC
GCACACACCGCTGCTGAATCAGCAATAGACACTTCGCGCCCCAGGTCTCGCGCG
8581 GAGCCTGAGAGCCTCACGGAGGCTATGACCAGGTACTCCGCCCTGGGGACCCCCC
CTCGGACTCTCGGAAGTGCCTCCGATACTGGTCATGAGGCGGGGGGACCCCTGGGGG
8641 ACAACCAGAATACGACTGGAGCTCATACATCATGCTCTCAACGTGTCAGTCGCCA
TGTTGGTCTTATGCTGAACCTCGAGATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGT
8701 CGACGGCGCTGGAAAGAGGGTCTACTACCTCACCGTACCCCTACAACCCCCCTCGCGAG
GCTGCCCGACCTTCTCCAGATGATGGAGTGGGCACTGGATGTTGGGGGAGCGCTC
8761 AGCTGCGTGGAGACAGCAAGACACACTCCAGTCATGCTGGCTAGGCAACATAATCAT
TCGACGCACCCCTGTCGTTCTGTGAGGTCACTTAAGGACCGATCCGTTGATTAGTA
8821 GTTTGCCCTACACTGTGGCGAGGATGATACTGATGACCCATTCTTACGCTCTTAT
CAAACGGGGGTGTGACACCCGCTCTACTATGACTACTGGTAAAGAAATCGCAGGAATA
8881 AGCCAGGGACCAGCTGAAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCAT
TCGGTCCCTGGTCGAACCTGTCGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTA
8941 AGAACCACTTGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTCACT
TCTGGTGAACTAGATGGAGGTTAGTAAGTTCTGAGGTACCGGAGTCGCGTAAAGTGA
9001 CCACAGTTACTCTCCAGGTGAAATTAAAGGGTGGCCGATGCCCTCAGAAAACCTGGGGT
GGTGTCAATGAGAGGGTCCACTTAATTATCCCACCGCGTACGGAGTCTTGTGAACCCCA
9061 ACCGCCCTGCGAGCTGGAGACACCGGGCCCGAGCGTCCCGCCTAGGCTCTGGCCAG
TGGCGGGAACGCTCGAACCTCTGTGGCCCGGGCTCGCAGGCGCAGTCGAAGACCGGTC
9121 AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTCAACTGGCAGTAAGAACAAAGCT
TCCTCCGTCCCGACGGTATACACCCTGTCATGGAGAAGTTGACCCGTATTCTGTTGCA
9181 CAAAC
GTTTG

NH₂ —

FIG. 63

-COOH

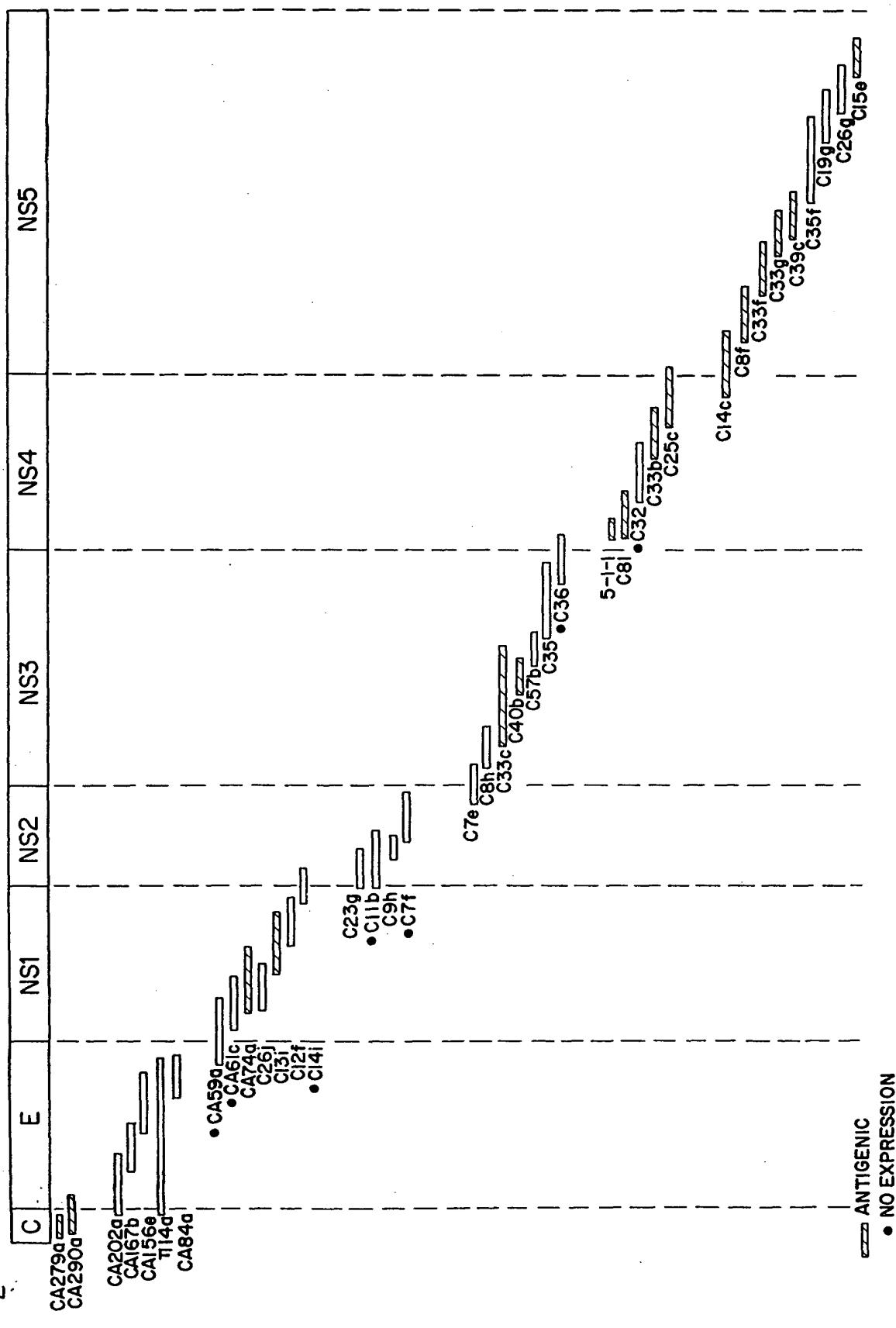
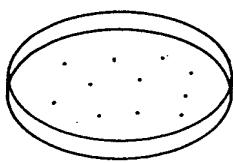


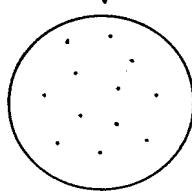
FIG. 64

TRANSFORM E coli WITH RECOMBINANT PLASMIDS

↓ (BLOT BACTERIA ON
NITROCELLULOSE FILTER)

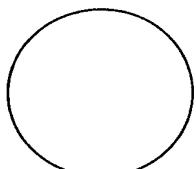


IPTG PLATE



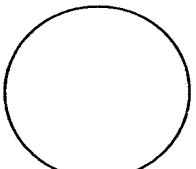
LYSE WITH CHLOROFORM

↓



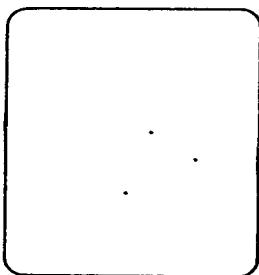
INCUBATE WITH PRIMARY
ANTIBODY

↓ WASH



INCUBATE WITH
 ^{125}I SECONDARY ANTIBODY

↓ WASH



AUTORADIOGRAPH

	CHIMPS	EXPRESSION LEVEL	CHRONIC HCV PATIENT C100 POSITIVE								CHRONIC HCV PATIENT C100 NEGATIVE								CONVALESCENT C100 NEGATIVE	COMMUNITY AC			
			1. POST ACUTE		2. POST ACUTE		3. C100 CONVERSION		2		3		4		5		6		7				
			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
SOD	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA259a	-	-	-	-	-	-	-	-	++	++	-	-	-	-	-	-	-	-	+	-	-		
CA290a	-	-	-	-	-	-	-	-	++	++	-	-	-	-	-	-	-	-	+	-	-		
CA202a	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA167a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA156C	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
$\pi 14a$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA84a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA59a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA61C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CA74a	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-		
C26j	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cl3i	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-		
Cl2f	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cl4i	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C23g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cl1b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C9h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C7f	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C7e	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C8h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C33c	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
C40g	+	-	-	-	-	-	-	-	+	#	-	-	-	-	-	-	-	-	-	-	-		
C37b	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C35	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C36	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
5-11	+	-	-	+	±	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
C8l	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-		
C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C33b	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-		
C25c	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-		
Cl4c	+	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-		
C8f	+	-	-	+	-	+	-	+	-	+	-	-	-	-	-	-	-	+	-	-	-		
C33f	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	+	-	-	-	-		
C33g	+	-	-	-	-	+	-	-	+	-	+	-	-	-	-	-	-	+	-	-	-		
C39c	+	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	+	-	-	-		
C35f	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cl9g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C26g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cl5e	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	±	-	-	-	-		

N.T. = EXPRESSION NOT TESTED

± THIS POLYPEPTIDE WAS NEGATIVE IN THIS
COLONY SCREEN BUT POSITIVE BY WESTERN
BLOD ANALYSIS

FIG. 65

FIG. 66A

R T
MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTTERSQPRGRRQPPIPKARRPEGRTWAQPGYPWPLYGNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGVIDTLCGFADLMGYIPLVGAPLGGAAARA

T
LAHGVRVLEDGVNYATGNLPGCSFSI^TFLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVCREGNASRCWAMTPTVATRD
GKLPATQLRRHIDLVLGSATLCSALYVGDLGSVFLVGQLFTSPRRHWT-300

V
TQGCNCISIYPGHIITGHRMAWDMMMNWSPTTALVMAQLLRIPQAILEDIAIG
AHWGVLAGIAYFSMVGNWAKVLVVLLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLALFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCGPVYCFTPSPVVVGTTDRSGAPTYSWGENDTDVFVLNNTRPPLGNWF
GCTWMNSTGFTKVCGAPPVCIGGAGNNTLHCPTDCFRKHPDATYSRCGSG-600

I
PWLT^IPRCLVDYPYRLWHYPCTINYTI^IFIRMYVGGVEHRLAACNWTRGE
RCDLEDRDRSELSPLLLTTTQWQVLPSCFTTLPALSTGLIHLHQNIVDVQ-700
YLYGVGSSIASWAIKWEYVVLFLLLADARVCSCLWMMLLISQAEAALEN
LVILNAASLAGTHGLVSFLVFFCAWYLKGKWVPGAVTFYGMWPLLLL-800

(N)
LALPQRAYALDTEVAASC^(N)GGVVLVGLMALTLS^(N)PYYKRYISWCLWWLQYFL
TRVEAQLHWI^(N)PPLNVRGGRDAVILLMCAVHPTLVFDITKLLLAVFGPLN-900
ILQASLLKVPYFVRVQGLLRFCALARKMIGGHYVQMVI^(N)IKLGALTGTYYV
NHLTPLRDWAHNGLRDLAVAVEFVVFSQMETKLITWGADTAACGDIINGL-1000
PVSARRGREILLGPADGMVSKGWRLLAPITAYAQQT^(N)RGLLGCIITSLTGR
DKNQVEGEVQIVSTAQTTFATCINGVCWTVYHGAGTRTIA^(N)SPKG^(N)PVIQM-1100
YT^(N)NVDQDLVGWPAPQGSRS^(N)LTPCTCGSSDLYL^(N)VT^(N)RADV^(N)IPV^(N)RRRGDSRG
SLLSPRPISY^(N)LKGSSGGPLLCPAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQS^(N)QVAHLHAPTGSGKSTKVPAAYAAQGYK

L
VLVLNPSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYGKFL-1300
ADGGCGGGAYDIIICDECHSTDATSI^LLIGITVLDQAETAGARLVVLATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEV^LIKGGRHLIFCHSKKKC-1400
DELAAKLVALGINAVAYYRGLDVSVIPTSGDVVVVATDALMTGYTGDFDS

Y (S)
VIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNT^(S)GLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTKQSGENLPYLVAYQATV^(S)CARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLL^(S)YRLGAVQNEITLTHPVTKYIMTCMS
ADLEVVTSTWVLVGGVLAALAA^(S)YCLSTGCVVIVGRVVLSGKPAIIPDREV-1700
LYREFDEMEECSQHLPYIEQGMMLAEQFKQKALGLLQTA^(S)RQAEV^(S)APAV
QTNWQKLET^(S)FWAKHMWNFISGIQYLAGLSTLPGNP^(S)AIASLMAFTA^(S)VTSP-1800
LTTSQTLLFNILGGWVAAQLAAPGAATAFVGAGLAGAAIGSVGLGKVLID

FIG. 66B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVVCAA-1900

(HC)
ILRRHVGPGEHAVQWMNRILAFASRGNHVSPTHYVPESDAAARVTAILSS
LTVTQLLRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTWLAKLM-2000

(V)
PQLPGIPFVSCQRGYKGWWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGPCPLPAPNYTFALWRVSAEEYVEIRQVGDFH-2100
YVTGMMTDNLKCPCQVPSPEFFTTELGVRLHRFAPPCKPLLREEVSFRVG
LHEYPVGSQLPCEPEPDVAVLTSMLTDPHSITAEEAGRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSPDAELIEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVWARPDYNNPLVET-2300

S
WKKPDYEPPVVGCPPLPPPKSPPVPPRKKRTVVLTESTLSTALAELATR

(FA)
SFGSSSTSGITGDNTTSSEPAKSGCPPSDAESYSSMPPLEGEPEGDPDL-2400
SDGSWSTVSSEANAEDVVCCSMSYSWTGALVTPCAAEEQKLPIINALSNSL
LRHHNLVYSTTSRSACQRQQKVTFDLQVLDHYQDVLKEVKAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSKFGYGAKDVRCHARAKAVTHINSVWKDLLEDN
VTPIDTTIMAKNEVFCVQPEKGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAIFYQCCDLDPQARVAIKSLTERLYVGGPLTNSRGENGYRRCR-2700
ASGVLTTSCGNTLTCYIKARAACRAAGLQDCTMLVCGDDLVVICESAGVQ
EDAASLRAFTEAMTRYSAPPGDPPQPEYDLELITSCSSNVSAHDGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNWLGNIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPPIQRLHGLSAFLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWRHRARSVRARLLARGGRAICGKYLFNWAV
RTKLK----- (Stop codon not yet reached)

() = Heterogeneity due to possible 5' or 3'
terminal cloning artefacts.

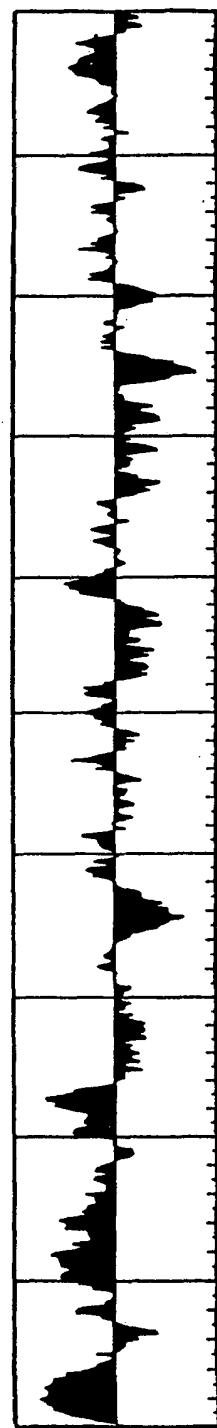
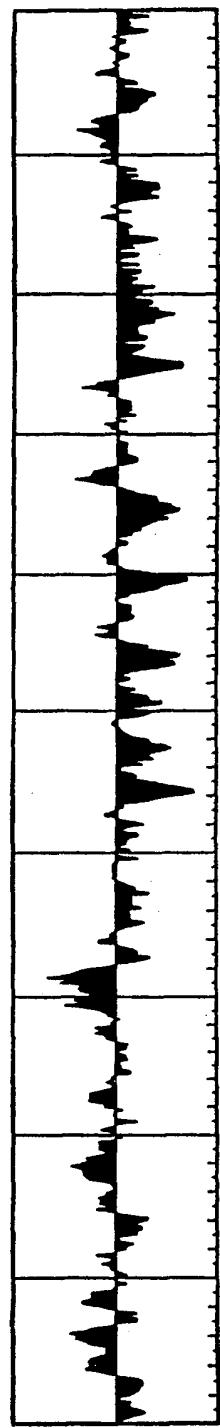
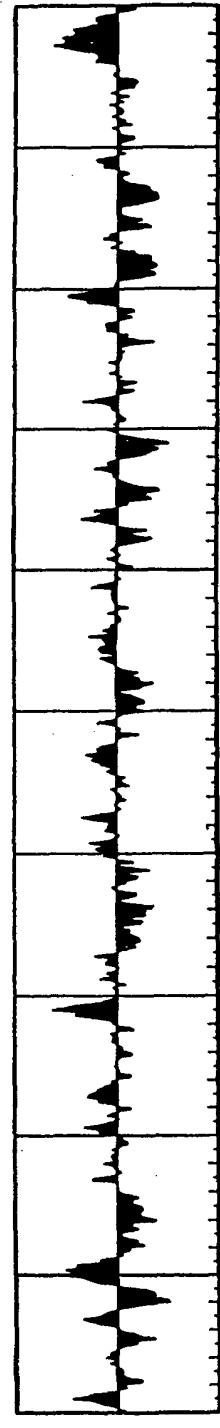


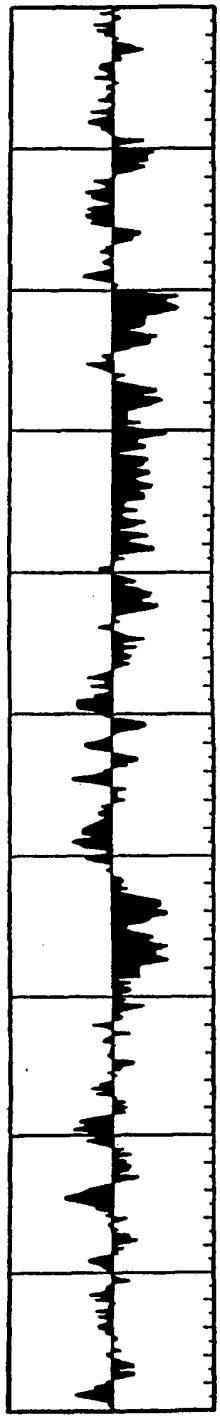
FIG. 67A



(501-1000)



(1001-1500)



(1501-2000) HCV

FIG. 67B

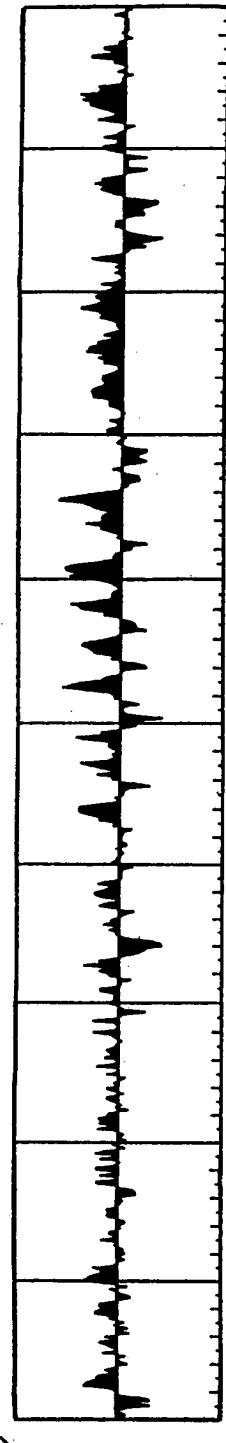
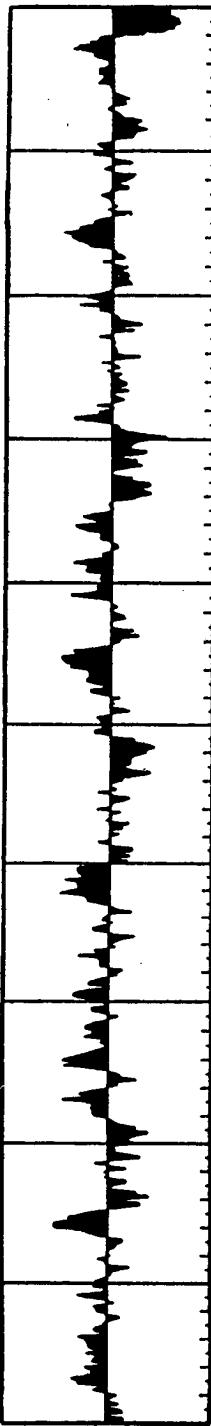


FIG. 67C
{ (2001-2500)



(2501-3000)

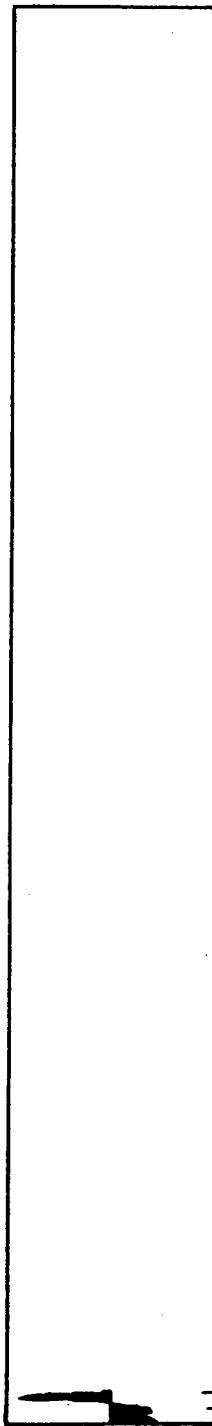


FIG. 67D
(3001-3011) HCV

FIG. 68

NS5
Highly-conserved
Polymerase
region

NS3 region

Flaviviruses (Yellow Fever, West Nile,Dengue)	TATPPG-----SAAQRRGRIGRNP-----GDDCVV
	***** * * * * *** *
HCV	TATPPG-----SRTQRRGRTGRGK-----GDDLVV
	#1348 #1483 #2737

FIG. 73

5' CCGGGCAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCTCCGGGGAAC 3'
CGCTCCCCGTACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCTTG 5'
3' CATGTTCCCCCTAATGAG 3'
GTACAAAGGGGGATTACTCAGC 5'

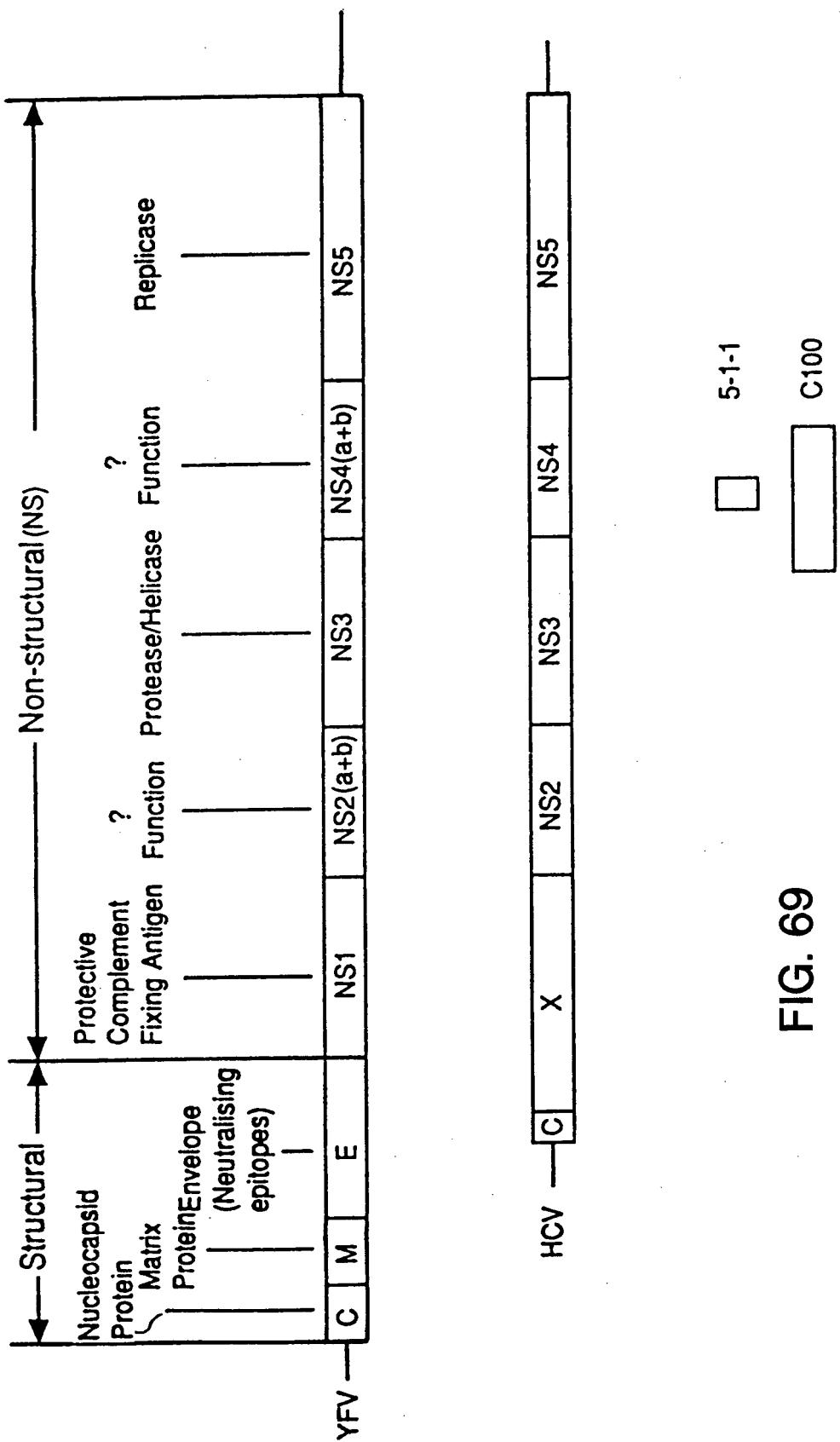


FIG. 69

FIG. 70

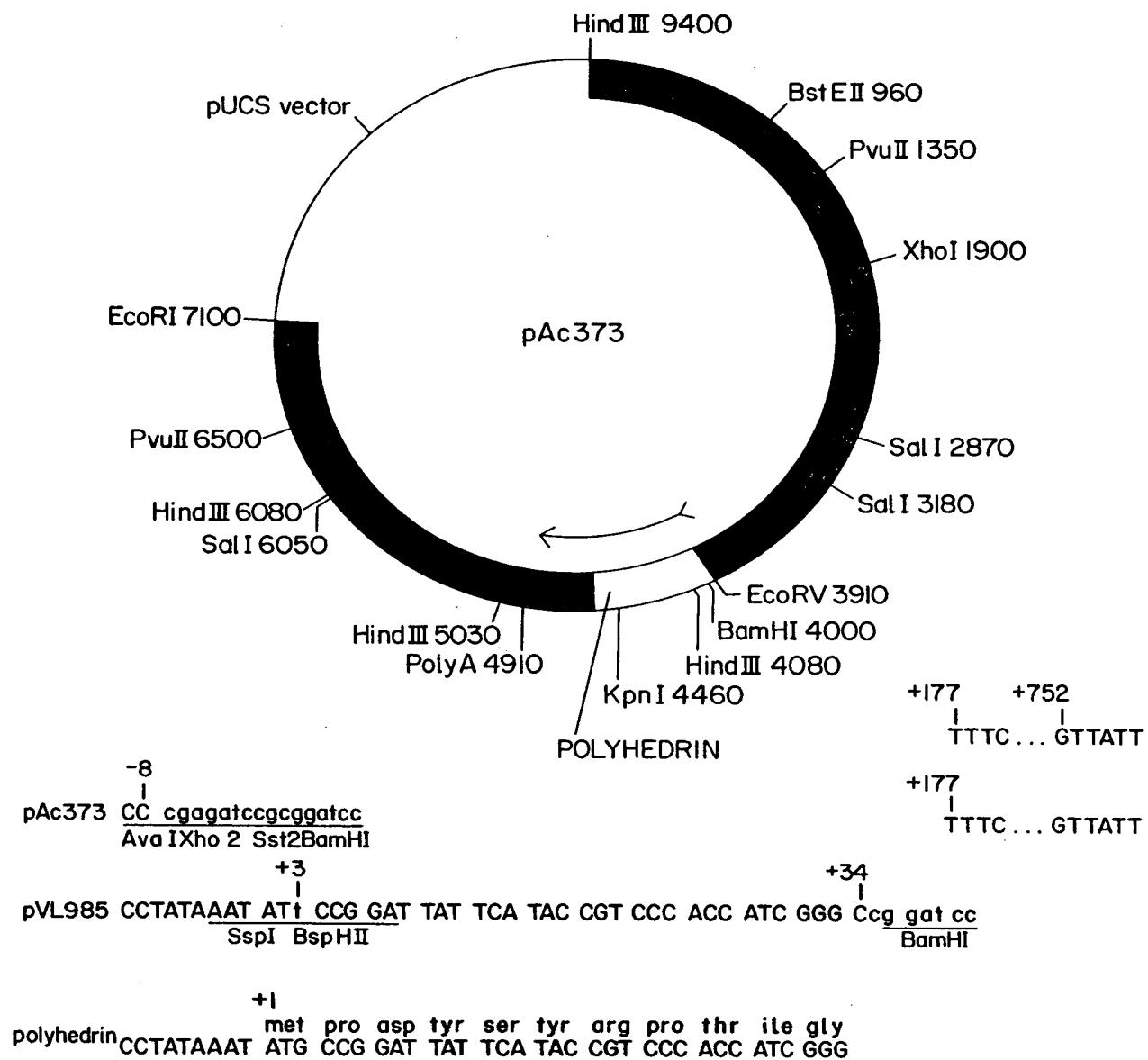


FIG. 71

Overlap with 16jh-----

GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
1 GGCAGGGCTGCCATATGTGGCAAGTACCTCTCAACTGGCCAGTAAGAACAAAGCTCAA
CGTCCCCACGGTATAACACGGTTCATGGAGAAGTTGACCCCGTCATTCTGTTCCGACTT

-
LeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
61 CTCACTCCAATAGCGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTCAACGGCTGGCTAC
GAGTGAGGTTATCGCCGGGACCGGTCGACACTGAACAGGGCACCAAGTGGCACCGATG

SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpPheCys
121 AGCGGGGGAGACATTATCACAGCGTGTCTCATGCCGGCCCGCTGGATCTGGTTGC
TCGCCCCCTCTGTAAATAAGTGTGGCACAGAGTACGGGGGGGGGACCTAGACCAAAACG

181 CC
GG

FIG. 72A

MetSerThrAsnProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGln
1 ATGAGCACGAATCCTAAACCTCAAAAAAAACAACGTAACACCAACCGTCGCCACAG
TACTCGTGCTTAGGAGTTGGAGTTTTTTGTGTTGCAATTGGGTGAGCGGGGTGTC

AspValLysPheProGlyGlyGlyGlnIleValGlyGlyValTyrLeuLeuProArgArg
61 GACGCTCAAGTTCCCGGGTGGGGTCAGATCGTGGGGAGTTACTTGTGGGGCAGG
CTGCAGTTCAAGGGCCCACCGCCAGTCTAGCAACACCACCTCAAATGAACAAACGGCGTCC

FIG. 72B

121 GlyProArgLeuGlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgLys
GGCCCTAGATTGGGTGTGGCGACGAGAAAGACTTCCAGCGGTGCCAACCTCGAGGT
CCGGATCTAACCCACACGGCGCTGCTTCTGAAGGGTCCCAGCGTTGAGCTCCA

181 ArgArgGlnProIleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGly
AGACGTCAAGCTTATCCCCAAGGCTTCGTCGGCCAGGGCAGGACCTGGCTCAGGCGG
TCTGCAGTCGGATAGGGGTTCCGAGCAGCCGGCTCCGGACCCGAGTCGGGCC

241 TyrProTrpProLeuTyrglyAsnGluGlyTrpAlaGlyTrpLeuLeuSerPro
TACCCCTGGCCCTCTATGGCAATGAGGGCTGCGGTGGCGGTGGCTCTGTCCTCCC
ATGGGAACCGGGGAGATACCGTTACTCCGACGCCACCCGGCCCTACCGAGGACAGGG
ATGGGAGAGCCGGATCGACCCGGGTCTGGGGGTCTGGGGCATCCAGGGCTTAACCCA

301 ArgGlySerArgProSerTrpGlyProThrAspProArgArgSerArgAsnLeuGly
CGTGGCTCTGGCTTAGCTGGCCCCACAGACCCCCCGTAGGTGGCTCGGCCATTGGGT
GCACCGAGAGCCGGATCGACCCGGGTCTGGGGGTCTGGGGCATCCAGGGCTTAACCCA

361 LysValIleAspThrLeuThrCysGlyPheAlaAspLeuMetGlyTyrIleProLeuVal
AAGGTCAATCGATAACCTTACGTGGGAATGCCGACCTCATGGGTACATGGCTCGTC
TTCCAGTAGCTATGGGAATGCCGACGGGGCTGGAGTACCCATGTATGGCGAGCAG

421 GlyAlaProLeuGlyAlaAlaArgAlaLeuAlaHisGlyValArgValleuGluAsp
GGGGCCCTCTGGAGGGCGCTGCCAGGGCCATTGGCTCCGGTTCTGGAAAGAC
CCGGGGGAGAACCTCCGGGACGGTCCGGGACCCGGTACCCGAGGCCCCAACACCTCTG

FIG. 72C

GlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPheSerIlePheLeuLeuAla
GGCGTGAACATATGCCAACAGGGAAACCTTCCTGGTTGGCTCTATCTTCCTTCTGGCC
CCGCACTTGATACTGTCCTTGAAGGACCAACGAGAAAGAGATAAGAAGACCAGG

LeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnValArgAsnSerThrGlyLeu
541 CTGGCTCTCTGCTTGACTGTGCCCCGCTTCCGCTTAACCAAGTGGCGCAACTCCACGGGGCTT
GACGAGAGAACGAAACTGACACGGCGAAGGCCGATGGTTACGGCTCACGGTTGAGGTGCCGAA

TyrHisValThrAsnAspCysProAsnSerSerIleValTyrGluAlaAlaAspAlaAlaIle
601 TACCACTGCACTGATGATTGCCCTAACTCGAGTATTGTGTTACGAGGCCGCGATGCCATC
ATGGTGCAGTGGTTACTAACGGGATTGAGCTCATAACACATGCTCCGGCTACGGTAG

LeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSerArgCysTrpVal
661 CTGCAACTCGGGGGTGGCGGTCCCTGGGTTTCGAGGGAAACGCCCTCGAGGTGTTGGTG
GACGTGTGAGGCCACACGCAAGGAAACGCAACTCCCGTTGCCAGGCTCACACCCAC

AlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGlnLeuArgArg
721 GCGATGACCCCTACGGTGGCCACCAAGGGATGGCAAACACTCCCCGGACGCAGCTTGACGTC
CGCTACTGGGGATGCCACGGGTTGGCTCCCTACCGTTGAGGGGCTTGCGGTCGAAAGCTGCA

HisIleAspLeuLeuValGlySerAlaLeuCysSerAlaLeuTyrvAlGlyAspLeu
781 CACATCGATCTGCTTGTGGGAGGCCACCCCTCTGTTGGGAGACAAGCCGGAGATGCACCCCTGGAC
GTGTAGCTAGCGAACAGCCC

CysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArgHisTrpThr
841 TGGGGTCTGTCTTCTGGCCAACTGTTCACCTCTCCAGGGCCACTGGACG
ACGCCAGAACAGAAAGAACAGCCGGTTGACAAGTGGAAAGAGAGGGTCCGGGTGACCTGC

FIG. 72D

901 ThrlGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrp
 ACGCAAGGTTGCCATTGCTCATCTATCCGGCATATAACGGGTCACCGCATGGCATGG
 TGC GTTCCAACGTTAACGAGATAAGGGCGGTATAGGGCCATTACCGAGTCACGGTACCGTAGC

961 AspMetMetAsnTrpSerProThrThrAlaLeuValMetAlaGlnLeuArgIle
 GATATGATGATGAACACTGGTCCCCCTACGACGGCGTGGTAATGGCTCAGCTGCTCCGGATC
 CTATACTACTACTTGACCAAGGGATGCTGCCGCAACCATTACCGAGTCACGAGGCCTAG

1021 ProGlnAlaIleLeuAspMetIleAlaGlyAlaHistrpGlyValLeuAlaGlyIleAla
 CCACAAGCCATCTTGACATGATCGCTGCTCACTGGGAGTCCTGGCGCATAGCG
 GGTGTTCGGTAGAACCTGACTAGCGACCCACGAGTCACGGACCCCTCAGGACCGCCGTATCGC

1081 TyrPheSerMetValGlyAsnTrpAlaLysValLeuValLeuLeuPheAlaGly
 TATTCTCCATGGTGGGAACCTGGGAAGGTCTGGTAGTGGCTATTGCCGGC
 ATAAAGAGGTACCCCTTGACCCGCTTCCAGGACCATCACGACGACGATAAACGGCCG

1141 ValAspAlaGluThrHisValThrGlyGlySerAlaGlyHisThrValSerGlyPheVal
 GTCGACGGAAACCCACGTCACCGGGCAAGTGGCTGCTGGTCTGGATTGTT
 CAGCTGCGCCCTTGGGTGCACTGGCCCTTCACGGCCGGTGTGACACAGACCTAACAA

1201 SerLeuAlaProGlyAlaLysGlnAsnValGlnLeuIleAsnThrAsnGlySerTrp
 AGCCTCCTCGCACGCCAGGAGCAAGGAGCTCACACCAAACGGCAGTTGG
 TCGGAGGGCGTGGTCCGGTTCTCGACTAGTGTGGTGCAGTCGACTAGTGTGGTGCCTGCAAC

FIG. 72E

HisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsnThrGlyTrpLeuAlaGly
1261 CACCTCAATAGCACGGCCCTGAACTGCAATGATAAGCCTCAACACACCGGCTGGTGGCAGGG
GTGGAGTTATCGTGGCCGGACTTGACGTTACTATGGAGTTAGCTGGCCGACCAACCGTCCC

LeuPheTyrHisIleLysPheAsnSerSerGlyCysProGluArgLeuAlaSerCysArg
1321 CTTTTCTATCACCACAAGTCAACTCTTCAGGCTGTCCCTGAGGGCTAGGCCAGCTGCCGA
GAAAGATAAGTGGTGTCAAGTTGAGAAGTCCGACAGGACTCTCGATCGGTGACGGCT

ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyrAlaAsnGlySerGlyPro
1381 CCCCTTACCGATTGACCAGGGCTGGGGCCCTATCA GTTATGCCAACCGGAAGCGGCC
GGGGAATGGCTAAAACCTGGTCCC GACCCCCGGATAGTCAAATACGGTTGCCTTCGCCGGGG

AspGlnArgProTyrCysteineTyrProProLysProCysGlyIleValProAlaLys
1441 GACCAGGGCCCTACTGCTGGCACTACCCCCAAACCTGCGGTATTTGTGCCGGCAAG
CTGGTCCGGGGATGACGACCCTGATGGGGGTGATGGGGCTTGGAACGCCATAACACGGGCCCTC

SerValCysGlyProValTyrCysPheThrProSerProValValValGlyThrThrAsp
1501 AGTGTGTGGTCCGGTATTTGCTTCACTCCAGCCCCGTGGTGGGAACGACCGAC
TCACACACACCAGGCCATAACGAAAGTGAAGTGGGGCACCACCCCTGCTGGCTG

ArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThrAspValPheValLeuAsn
1561 AGGTGGGGCGCCACCTACAGCTGGGTGAAATGATA CGGACGTCTTCGTCCTTAAC
TCCAGCCCCGGGGGGATGTCGACCCCACTTACTATGCCCTTACTATGCCCTGAGCAGGAATTG

FIG.72F

1621	AsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrpMetAsnSerThrGlyPhe AATACCGGCCACCCGCTGGCAATTGGTTGGTACCTGGATGAACACTCAACTGGATTCTTATGGTCCGGTGGCGACCCGTTAACCAAGCCAACATGGACCTACTTGAGTTGACCTAAG
1681	ThrLysValCysGlyAlaProProCysValIleGlyGlyAlaGlyAsnAsnThrLeuHis ACCAAAGTGTGGGAGGCCCTCCTTGTGTCATCGGAGGGGGCAACAAACACCCCTGCAC TGGTTTCACCGCCTCGGGAGGAACACAGTAGCCTCCCCCGTGTGGGACGTTG
1741	CysProThrAspCysPheArgLysHisProAspAlaThrTyrSerArgCysGlySerGly TGCCCCCACTGATTGGCTTCCGCAAGCATCCGGACGCCACATACTCTGGTGGCTCCGGT ACGGGGGTGACTAACGAAAGGGCTTCTGGCTTAGGGCTAGGAGCCACGCCAGGGCCA
1801	ProTrpLeuThrProArgCysLeuValAspTyrProTyrrArgLeuTrpHisTyrProCys CCCTGGATCACACCCAGGTGCCCTGGTGCACATACCCGGTATAGGCTTGGCATTTATCCTTGT GGGACCTAGTGTGGTCTAACATTAGTGGCATATGGCATAATCCGAACCGTAATAGGAACA
1861	ThrIleAsnTyrThrIlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeu ACCATCAACTACACCATATTAAATCAGGATGTGATGGCATACTGCACCCCTCCCCAGCTTGTGTCGAC TGGTAGTTGATGTGGTATAAAATTAGTCCTACATGCACCCCTCCCCAGCTTGTGTCGAC
1921	GluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSer GAAGCTGGCTTGCAACTGGACGCCGGCGAACGTTGGATCTGGAAAGACAGGGACAGGTCC CTTCGACGGACGCTTGACCTGGCTTGGCAACGGCTAGACCTTCTGTCCCTGTCCAGG
1981	GluLeuSerProLeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThr GAGCTCAGCCCCGGTTACTGCTGACCAACTACACAGTGGCAGGTCCCTGGTGTCCCTCACA CTCGAGTCGGGCAAATGACGGACTGGTGTGATGTTGACCTGGCTTGGCAACGGCAAGGAAGTGT

FIG. 72G

ThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGln
2041 ACCCTACCGCCCTTGTCACCCGGCCTCATCCACCTCCACCAGAACATTTGTGGACGTCAG
TGGGATGGTCCGAAACAGGTGGGCCAGTAGGGAGGTGGTGGTCTGTAAACACCTGCACGTC

TyrLeuTyrglyValGlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrvValVal
2101 TACTTGTACGGGGTGGGTCAAGCATCGCGTCCCTGGGCCATTAAAGTGGGAGTACGTCGTT
ATGAACATGCCATGCCAACCCAGTCGTAGCGCAGGACCCGGTAATTCACCCCTCATGCAGCAA

LeuLeuPheLeuLeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeu
2161 CTCCTGTTCCCTCTGCTTGCAAGACGGGGCTCTGCTTCCTGCTTGATGGATGCTACTC
GAGGACAAAGGAAGACCAACGTAACGCTCTGGGGAGGACGGACGGAGGACCAACACCCCTACTACGATGAG

IleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAla
2221 ATATCCAAGGGAGGGCTTTGGAGAACCTCGTAATACTTAATGCCAGCATCCCTGGCC
TATAGGGTTCCGCCTCCGGAAACCTCTGGGAGCATTTAGAATTACGTCGTAGGGACCGG

GlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrpTryrLeuLysGly
2281 GGGACCCACGGCTTGATCCTTCGTTCTGCTTGCTTGCTATGGTATTGAAAGGGT
CCCTGGGTGCCAGAACATAGGAAGGAGCACAAAGAACGTACCAAACTCCCCA

LysTrpValProGlyAlaValTyrThrPhePheTyrGlyMetTrpProLeuLeuLeu
2341 AAGTGGGTGCCGGAGCCGGTCTACACCTCTACGGGATGTCCTCCTGCTCCCTG
TTCACCCACGGGCCTGCCAGATGTGAAAGATGCCAGACCCCTACACGGAGGAGGACGAGGAC

FIG. 72H

LeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGly
2401 TTGGCGTTGCCCAAGGGCGTACGGCTGGACACCGAGGTGGCCGGTTCGTTGGCGGT
AACCGCAACGGGGTGCCTGGCATGGCACCTGGCTCCACGGGAGCACACGGCCA

ValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrrTyryLysArgTyrIleSer
2461 GFTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCACCATATTACAAGGCTATAATCAGC
CAACAAGAGCAGCCCAACTACCGGACTGAGACAGTGGTATAATGTTGGCATATAGTCG

TrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisvalTrp
2521 TGGTGCCTTGTTGGCTTCAGTATTTCCTGACCAGAGTGGAAAGGCCAACTGCACGTGTTGG
ACCACGAACACCAACCGAAGCTCATAAAAGACTGGCTCACCTGGCTGACGTGCACACC

IleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuMetCysAlaVal
2581 ATTCCCCCTAACGTCGGGGGGGGGCGACGCCCTCATCTTACTCATCTGTCGCTGTA
TAAGGGGGAGTTGCAGGCTCCCCGGCTGGCAGTAGAATGAGATACACAGACAT

HisProThrLeuValPheAspIleThrLysLeuLeuAlaValPheGlyProLeuTrp
2641 CACCCGACTCTGGTATTGACATACCAAATTGCTGGCTGGCCGCTTCGGACCCCTTGG
GTGGGCTGAGACCATAAACTGTAGTGGTTAACGACGACCCGGAGAACGCTGGGAAACC

IleLeuGlnAlaSerLeuLeuLysValProTyrrPheValArgValGlnGlyLeuLeuArg
2701 ATTCTTCAAGCCAGTTGCTTAAGTACCCCTACTTGTGGCGGTCCAAAGGCCTTCTCCGG
TAAGAAGTTGGTCAAACGAATTTCATGGGATGAAACACGGCAAGGGTCCGGAAAGGGCC

FIG. 721

PheCysAlaLeuAlaArgLysMetIleGlyHisTyrValGlnMetValIleIleLys
2761 TTCTGGCGTTAGCGGAAAGATGATCGGAGGCCATTACGTGCAAAATGGTCATCATTAAG
AAGACCGCGCAATCGCCCTACTAGCCTCCGGTAATGCACGTTACCGTAGTAAATTCA

LeuGlyAlaIleThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAla
2821 TAGGGGGCCTTACTGGCACCTATGTTATAACCATTCTCACTCAGCAGAAAGGGTTACCTC
AATCCCCGGGAATGACCGGTGAGATAACAAATTTGGTAGAGTGAGGAGAACCCCTGACCCGC

HisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGlnMetGlu
2881 CACAACGGCTTTCGGAGATCTGGCGTAGAGGCCAGTCGTCTCCCAAATGGAG
GTGTTGCCGAACGCTCTAGACCGGCACCGACATCTCGGTCAAGCAGAAAGGGTTACCTC

ThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeu
2941 ACCAAGCTCATCACGTGGGGCAGATAACCGCCGGTGCCTGACATCATCAACGGCTTG
TGGTTCGAGTAGTGCACCCCCGGTCTATGGGGGGCACGCCACTGTAGTAGTTGCCGAAC

ProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSer
3001 CCTGTTTCCGGCCGGCAGGGGGGGAGATACTGCTCGGCCAGGCCATGGAAATGGTCTCC
GGACAAAGGGGGCGTCCCCGGCCCTATGACGAGGGGGTCCGCTACCTTACCAAGAGG

LysGlyTrpArgLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeu
3061 AAGGGGGTGGAGGGTTGCTGGGCCCATCACGGCGTAGTGCCTGAGGGTCTGGTTCCGGAGGAT

GLYCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluValGln
3121 GGGTGCGATAATTACCAAGCCTAAACTGGCGGGACAAAAACCAAGTGGAGGGTGGGTCCAG
CCCACCGTATTAGTGGTGGGATTGACCGGGCCCTGTTTGGTTCACCTCCACTCCAGGTC

FIG. 72J

3181	IleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThr ATTGTGTCAACTGCCAACCTCCTGGCAACGTCATCAATGGGGTGTGGACT TAACACAGTTGACGACGGGTTGGAAAGGACCGTACGTAGTTACCCCACACGACCTGA
3241	ValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMet GTCTACCACGGGGCCGGAAACGGGACCATGGCTCCTGGTAGGCCAGTGGGTCCCCAGGACAGTAGGTCTAC CAGATGGTGCCTGGGGCTTGCTCCTGGTAGGCCAGTGGGTCCCCAGGACAGTAGGTCTAC
3301	TyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeu TATACCAATGAGACCAAGACCTTGTGGCTGGCCCTGGCAAGGTAGGCCAGTGGCTACAGTAA ATATGGTTACATCTGGTCTGGAACACCCGACCGAACACCCGACCGGGCGAGGGTCCATGGCGAGTAAC
3361	ThrProCysthrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIle ACACCCCTGCACCTGGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCATT TGTGGGACGTGAACGCCGAGGGCCTGGAAATGGACCACTGGCTCCGTGGCTACAGTAA
3421	ProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProlineSerTyr CCCGTGGCGGGGGTGTAGCAGGGCAGCCTGCTGGCCCCCATTTCCTAC GGGCACCGGGCCCACTATCGTCCCCGTCGGACAGCGACGGGGGGTAAAGGATG
3481	LeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePhe TTGAAAGGCTCCTCGGGGTCCGGCTGTGGCCGGCACGCCGTGGCATATT AACTTCCGAGGAGCCCCCAGGGACAACACGGGGCGCCCTGGGCACCCGTATAAA
3541	ArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsn AGGGCCGGGTGTGGCACCCGGTGGAGTGGCTAAGGCCGGTGGACTTATCCCTGTGGAGAAC TCCCGGGCCACACGTGGCACCTCACCGATTCCGGACACCTGAAATAAGGGACACCTCTG

FIG. 72K

FIG. 72L

3961	ThrAspAlaThrSerIleLeuAlaLeuAspGlnAlaGluThrAlaGly ACGGATGCCACATCCATCTGGCATCGGCACTGTCTTGACCAAGCAGAGACTGGGG TGCCTACGGTGTAGGTAGAACCGTAGCCGTAGAGAACCTGGTTCTGACCCCC	AlaArgLeuValLeuAlaThrAlaThrProProGlySerValThrValProHisPro GGGAGACTGGTTGTGGCTCGCCACCGCACCCCTCCGGCTCCGTCACTGTGCCCATCCC CGCTCTGACCAACAGGGTGGCGGTGGGAGGGCCGAGGCGACTGACACGGGTAGGG
4021	AsnIleGluGluvalAlaLeuSerThrThrGlyGluIleProphetYrglyLysAlaIle AACATGGAGGGTTGCTCTGTCACCCACGGAGAGATCCCTTACGGCAAGGCCATTC TGTAGCTCCTCCAACGAGAACGGTGGCTCTAGGGAAAATGCCGTTCCGATAG	ProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSerLysLysCYS CCCCTCGAAGTAATCAAGGGGGAGACATCTCATCTGTCATTCAAAAGAAAGTGC GGGAGCTCATTAGTTAGTCCCCCCCCTCTGTAGAGTAGAACAGTAAGTTCTCAGC
4081		
4141		
4201	AspGluLeuAlaAlaLysLeuValAlaLeuGlyIleasnAlaValAlaTyrrTyrrArgGly GACGAACCTGGCCAAAGCTGTCGCTTGACCCGTAACCCGTAGTTACGGCACCG CTGCTTGAGCGGGCTTTCGACCCGTAACCCGTAGTTACGGCACCGTACGGCTACGGCCA	LeuAspValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeu CTTGACGCTGTCCTCCGTCATCCGACCGGGCATGTTGTCGTCGTTGGCAACCCGATGCCCTC GAAACTGCAAGGGCAGTAGGGCTGGCTGGCCGCTACAACAGCAGCACGGTACGGGAG
4261		

FIG. 72M

MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysasnThrCysValThrGln
4321 ATGACCGGCTATCCGGGACTTCGACTCGGTAGACTGCAATACTGTGTCACCCAG
TACTGGCCGATATGCCGCTGAAGCTGACGTTATGCACACAGTGGTC

ThrValAspPheSerLeuAspProThrPheThrileGlutThrileLeuProGlnAsp
4381 ACAGTCGATTCCAGCCTGACCCTCACCATGGAGACAATCACGCTCCCCCAGGAT
TGTCAAGTCGGAAGTGGATGGAACTCTGTACTGTGCTAGTGCGAGGGTCCTA

AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
4441 GCTGCTCCCGCACTCACGTGGGCAAGGACTGGCAGGGGAAGCCAGGCATCTACAGA
CGACAGAGGGCGTGAGTTGCAGCCCCCTCGCTGACCGCTCCCTCGGTCCGTTAGATGCT

PheValAlaProGlyGluArgProSerGlyMetPheAspSerSerValIleCysGluCys
4501 TTGTGGCACGGGGAGCCCTCGGCATGTCGACTCGTCCGTCCTCTGTGAGTGC
AACACCGCTGGCCCTCGGGGAGGCCGTAACAAGCTGAGCAGGCAGGAGACACTCACG

TyraspalaGlycysalaTrpTyrgluLeuThrProAlaGluThrThrvalArgIleuArg
4561 TATGACCGAGGCTGTGCTTGGTATGAGCTCACCCCCGGAGACTACAGTTAGGCTACGA
ATACTGGCTCCGACACGAAACCATACTCGAGTGGGGCTCTGATGTCATCCGATGCT

AlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisIleuGluPheTrpGluGly
4621 GCGTACATGAACACACCCCCGGCTCCCGTGTGCCAGGACCATCTGAATTGGGAGGG
CGCATGTAATTGGGGCCCGAAGGGCACACGGCCTGGTAGAACTTAAACCCCTCCCG

ValPheThrGlyLeuThrHisIleAspalaHisPheLeuSerGlnThrLysGlnSerGly
4681 GTCTTTACAGGCCTCACTCATATAGATGCCACTTCTATCCAGACAAAGCAGAGGG
CAGAAATGTCGGAGTGGTATCTACGGGTGAAAGATAGGGTCTGTTCGTCTCACCC

FIG. 72N

4741	GluAsnLeuProTyrrLeuValAlaTyrrGlnAlaThrValAlaCysAlaArgAlaGlnAlaPro
4801	ProProSerTrpAspGlnMetTrpLysCysSleuIleArgLeuLysProThrLeuHisGly CCCCCATCGTGGACCCAGATGTGGAAGTGTTGATTGCCCTCAAGCCCACCCCTCCATGGG GGGGTAGCACCCTGGTCTACACCTCACAAACTAACGAAACTGGAGTTCGGGTACCC
4861	ProThrProLeuLeuTyrrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisPro CCAACACCCCTGCTATACAGACTGGCGCTGTTCAGAATGAAATCACCCCTGACGGCACCCA GGTTGGGGACGATAATGTCTGACCCGGACAAGTCTTACTTTAGTGGACTCCAGCAGTGGTGGGT
4921	ValThrLysTyrrIleMetThrCysMetSerAlaAspLeuGluValValThrSerThrTrp GTCACCAAATACATGACATGCAATGGCGACTGGGCTGGTCAACAGGCTGGACCTCCAGCAGTGGACC
4981	ValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaLysLeuSerThrGlyCysVal GGCTCGTTGGCGGGCTGGCTGGCTTGCCTGGCGTATTGCCTGTCAACAGGCTGGTGC CACGAGCAACGGCCGACGGACCGAACCGGACATAACGGACAGTTGTCGGACGCAC
5041	ValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAspArgGluVal GTCATAGTGGCAGGGCTCGTCTGGGGAAAGCCCCAAATCATACCTGACAGGGAAAGTC CAGTATCACCCGTCCCAAGCAGAACAGGCCCTTCGGCCGTTAGTATGGACTGTC CAGTC
5101	LeuTyrrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyrrIleGluGln CTCTACCCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGGCAACTAACGGTACATCGAGCAA GAGATGGCTCTCAAGCTTAACCTTCTCACGAGAGTCGTGAATGGCATATGCTCGTT

FIG. 720

FIG. 72P

5521	SerValGlyLeuGlyLysValLeuIleAspPheLeuAlaGlyTyrGlyAlaGlyValAlaAGTGTGGACTGGGAAGGTCTCATAGACATCCTTGAGGGTATGGCGGGCTGGCTCACAAACCTGACCCCTTCAGGAGTATCTGTAGGAACGGTCCATACGGGCCACCCG	GlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThrGluAspLeuValGGAGCTCTGTGGCATTCAGATCATGACCCTGAGGTCCCACGGAGGACCTGGTCCTCGAGAACACCGTAAGTTCACTCGCCACTCAGGGAGGTGCCTGCAGCAGCAG	AsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaAATCTACTGCCCGCCATCCTCGCCCCGGAGCCCTCTGTAGTCCGGGGTCTGGTGTGCAGGCA	IleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleATACTGGCCGGCACGTTGGCCCCGGAGGGGGCAGTGCAGTGGATGAACCCGGCTGACTTACCTACGTCAACGGGGCTCCCCGTGCAACCGGGCGTGCACGTCACTTGGCCGACTAT	AlaPheAlaSerArgGlyAsnHisValSerProThrHistYrValProGluSerAspAlaGCCTTCGCCCTCCGGGGAAACCATGTTCCCCCACGGCACTACGTGCGAGGGCATGCA CGAAGGGAGGGCCCCCTTGGTACAAGGGGTGCTGATGCACGGCTCTCGCTACGT	AlaAlaArgValIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuGCTGCCCGCTCACTGCCATACTCAGCAGCCACTGTAACCCAGCTCAGCAGCTGAGGGGACTGCGAGTGTGGAGTGAACATGGGTGAGTGTGACATGGGACTCCGGCTGAC
5581						
5641						
5701						
5761						
5821						

FIG. 72Q

		HisGlnTrpIleSerGluCysthrThrProCysSerGlySerTrpLeuArgAspIle
5881	CACCACTGGATAAGCTCGGACTGTACCTCCACTGCTCCGGTCTGGCTAAGGGACATC GTGGTCACCTATTGAGCCTCACATGGTAGGTACGGGAAAGGACCGATTCCCTGTAG	
5941	TGGGACTGGATAATGCCGAGGTGTGAGCGACTTTAACGACCTGGCTAAAGCTAAC ACCCTGACCTATAACGCTCCACAACTCGCTGAATTCTGGACCGATTTCGATTGAGTAC	
6001	ProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrylSGLyValTrpArg CCACAGCTGCCATTGGGATCCCCCTTGTGTCCAGCGCGGGTATAAGGGGTCTGGCGA GGTGTGACGGGACCCATTAGGGAAACACAGGACGGTGGCCATATTCCCCAGACCGCT	
6061	ValAspGlyIleMethionylArgCysHistidineGlyAlaGluIleThrGlyHisValLys GTGGACGGCATCATGCCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAA CACCTGCCGTAGTACCTGGTGAACCGGTGACACCTCGACTCTAGTGACCTGTACAGTT	
6121	AsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPhe AACGGGACGATGAGGATCGTGGCTTAGGACCTGCAGGAACATGTGGAGTGGGACCTTC TTGCCCTGCTACTCCTAGCAGGCCAGGATCCTGGACCTGTACACCTCACCCCTGGAAAG	
6181	ProlleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPhe CCCATTAAATGCCCTACACCACGGGGCCCTGTACCCCCCTTCTGGCGCCGAACCTACACGTT GGGTAAATTACGGATGTGGTGGCCGGGGACATGGGGGAAGGACGGGGCTGTGATGTGCAAG	

FIG. 72R

				AlaLeuTrpArgValSerAlaGluGluValGluIleArgGlnValGlyAspPheHis
6241				GCGCTATGGAGGGTGTCTGCAGAGGAATATGTGAGATAAGGCAGGTGGGGACTCCAC
				CGCGATACTCCCCACAGACGTCTCCTTATACACCTTATTCGGTCCACCCCTGAAGGTG
6301				TyrValThrGlyMetThrIleAspSerLeuLysCysProCysGlnValProSerProGlu
				TACGGTACGGGTATGACTACTGACAATCTCAATTGCCGTTGCCAGGTCCATGCCGAA
				ATGCACTGCCCATACTGATGACTGTAGAGTTACGGCACGGTCCAGGGTAGGGCTT
6361				PhePheThrGluLeuAspGlyValArgLeuHiisArgPheAlaProProCysLysProLeu
				TTTTCACAGAACGGGTTGCCCTACATAGGTTGGCCCCCTGCAAGCCCTG
				AAAAGTGTCTTAACCTGCCAACGGGATGTATCCAACGGGGGACGGTTGGGAAC
6421				LeuArgGluGluValSerPheArgValGlyLeuHiisGluIleProValGlySerGlnLeu
				CTGCGGGAGGAGGTATCATTCAAGTAGGACTCCACGAATACCCGGTAGGGTCCGAATTAA
				GACGCCCTCCATAGTAAGTCTCATCCTGAGGTCTTATGGCCATCCCAGCGTTAAT
				ProCysGluProGluProAspValAlaValLeuThrSerMetLeuThrAspProSerHis
				CCTTGCGAGCCGAAACGGACGTTGGCGTGTGACGCTCATGCTCACTGCTTCCCAT
				GGAACGCTCGGGCTTGGCCTGCACCGGACAACAGCAGGTACGGAGTGACTAGGGAGGGTA
6481				IleThrAlaGluAlaAlaGlyArgGluAlaArgGlySerProProSerValAlaSer
				ATAACAGCAGAGGGGGGGGGGGAGGTGGCGAGGGATCACCCCCCTGTGGCCAGC
				TATGTGCTCCGGCCGGCCGCTTCCAACCGCTCCCTAGTGGGGAGACACCGGTG
6541				

FIG. 72S

6601	SerSerAlaSerGlnLeuSerAlaProSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAsp TCCTCGGCTAGCCAGCTATCCATCTCAAGGCCAACTTGCACCGCTAACCATGAC AGGCCGATCGGTAGGGTAGAGAGTTCCGTTGAACGTGGGATTGGTACTG
6661	SerProAspAlaGluIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsn TCCCCGTATGGCTCATAGAGGCCAACCTCCATGGAGGAGATGGGGCAAC AGGGGACTACGACTCGAGTATCTCGGTIGGAGGATAACCTCCGGTCTACCCGGCTTG
6721	IleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeuVal ATCACCGGGTCCCAACTCAGTCTTTGTTCACTAAGACCTGAGGAAGCTAGGGCTAGGGCAACAC TAGTGGTCTGTTGAGTCAGTCTTGTGTTCACTAAGACCTGAGGAAGCTAGGGCTAGGGCAACAC
6781	AlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArgArg GGGGAGGGAGCAGGGAGATCTCCGTACCCGAGAAATCCTGGGAAGTCTGGAGA CGCCCTCCTGGCTCGCCCTCTAGGGCATGGGCTTAGAGGCTTAGGGCATGGACGGCTCAGAGCCCTCT
6841	PheAlaGlnAlaLeuProValTrpAlaArgProAspTyrosProProLeuValGluThr TTCGCCAGGCCCTGGCCGGACTATAACCCCCGGCTAGTGGAGAGC AAGGGGTCCGGGACGGGCAAACCCGGGACGGGCTGATATTGGGGCTTCCACCTCCAAG
6901	TrpLysLysProAspTyrgluProProValValHisGlyCysProLeuProProProLys TGGAAAAGCCCCGACTACCAACCACCTGGTCCATGGCTTCCACCTCCAAG ACCTTTTCGGGCTGATGCTGGGACACCCGGTACCGGACAGGGACAGGGAAAGGTGGAGGTTTC
6961	SerProProValProProArgLysLysArgThrValValLeuThrGluSerThrLeu TCCCCTCCCTGGCTCCGCCCTGGCTGGCTTCACTGAATCAACCCCTA AGGGGAGGGACACGGAGGGGAGGCCACCCAGGACTGACTTAGTTGGGAT

FIG. 72T

SerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyIle
7021 TCTACTGCCCTGCCGAGCTCGCCACCGAGAAGCTTGCGAGCTCCTCAACTTCCGGCAT
AGATGACGGAACCGGCTCGAGCGGTGGCTCGAAACCGTCGAGGAGTTGAAGGCCGTA

ThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGlyCysProProAspSer
7081 ACGGGGACAATACGACACATCCTCTGAGCCC GCCCTCTGGCTGCCCGGACTCC
TGCCCCGCTGTATGCTGTGTAGGAGACTCGGGGGGGAAAGACCGACGGGGGCTGAGG

AspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGlyAspProAspIeu
7141 GACGCTGAGTCCTATTCTCCATGCCGCCCTGGAGGGAGCCTGGGATCCGGATCTT
CTGGCACTCAGGATAAGGAGGTACGGGGGGACCTCCCGCTCGGACCCCTAGGCCTAGAA

SerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAspValValCysCys
7201 AGCGACGGGTCAATGGTCAACGGTCAGTAGTGAGGCCAACGCCGGGAGGATGTCGTGCTGC
TGGCTGCCAGTACCACTGGCCAGTCATCACTCCGGTGGCCTCCTACAGCACACGACG

SerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLys
7261 TCAATGCTTACTCTGGACAGGCCACTCGTCACCCCGTGGCCGGAAAGAACAGAAA
AGTTACAGAACGAGAACCTGTCGGCTGAGCAGTGGGCACGGGGCCTCTTGTCTT

LeuProIleAsnAlaLeuSerAsnSerLeuLeuArgGhiShiAsnLeuValTyrSerThr
7321 CTGCCCATCAATGCACTAACGAACTCGTTGCTACGTCACCACAAATTGGTGTATTCCACC
GACGGGTAGTTACGTCATTGCTTGACCAACGATGCCAGTGGTGTAAACCACATAAGGTGG

FIG. 72U

7381 ThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArgLeuGlnValLeu
ACCTCACGCAGTGCTGCCAAAGCCAGAAGTCACATTGACAGACTGCAAGTTCTG
TGGAGTGCCTCACGAACCGGTTCC'GTCTCTTCAGTGTAAACTGTCTGACGTTCAAGAC

7441 AspSerHistYrGlnAspValLeuLysGluValLysAlaAlaSerLysValLysAla
GACAGCCATTACCAAGGACGTACTCAAGGAGGTTAACCGAGCGGGTCAAAGTGAAGGCT
CTGTCGGTAATGGTCATGAGTTCCCTCCAATTCTGTCGCCAGTTCACTCCGA

7501 AsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHisSerAlaLysSerLys
AACTTGCTATCCGTAGAGGAAGCTTGCGACGCCACACTCAGCCAATCCAAG
TTGAACGATAGGCATCTCCTCGAACGGTGGACTGGGGGTGTGAGTCGGTTAGGTC

7561 PheGlyTyrglyAlaLysAspValArgCysHisAlaArgLysAlaValThrHisIleAsn
TTTGGTTATGGGCCAAAGACGTCGTTGCCATGCCAGAACGGCGTAACCCACATCAAC
AAACCAATACCCCGTTCTGCCAGGCAACGGTACGGTCTTCCGGCATGGGTAGTGTG

7621 SerValTrpLysAspLeuLeuGluAspAsnValThrProIleAspThrThrIleMetAla
TCCGTGTGAAAGACCTTCTGGAAGACAATGTAACACCAATAGACACTACCACATGGCT
AGGCACACCTTCTGGAAGACCTTCTGTTACATGTGGTTATCTGTGATGGTAGTACCGA

7681 LysAsnGluValPheCysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIle
AAGAACGAGGTTTCTGCCGTTCAGCCTGAGAAGGGGGTCTGTAAGGCCAGCTCGTCTCATC
TTCTTGCTCCAAAAGACGCCAAGTCGGACTCTCCCCCAGCATCGGTGGAGAGAGTAG

7741 ValPheProAspLeuGlyValArgValCysGluLysMetAlaLeuTyraspValValThr
GTTGTTCCCCGATCTGGGGTGGGAAAGATGGCTTGTACGACGTTGTTACA
CACAAAGGGCTAGACCCGCACGCCACACGCTTTCTACCGAAACATGCTGCACCAATGT

FIG. 72V

LysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArg
7801 AAGCTCCCTTGCCCGTGTGGAAAGCTCCTACGGATCCAATACTCACCGACACGCC
TCGAGGGAAACCGGCACTACCCTCGAGGATGCCTAAGGTATGAGTGCTCTGCGCC

ValGluPheLeuValGlnAlaTrpLysSerLysLysThrPrometGlyPheSerTyrAsp
7861 GTTGAATTCTCGTGCAAGCGTGGAAAGTCCAAGAAAACCCAAATGGGTTCTCGTATGAT
CAACTTAAGGAGCACGTTCGCACCTTCAGGTCTTGGGTTACCCCAAGAGCATCA

ThrArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyr
7921 ACCCGCTGCTTGACTCCACAGTCAGTGACTCTCGCTGTAGGCATGCCCTCCGGTTAGATG
TGGCGACGAACTGAGGTGTCACTGAGAGCCACATCCGTACGGAGGGCAATCTAC

GlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeu
7981 CAATGTTGTGACCTCGACCCCCAAGCCCGCTGGCCATCAAGTCCCTCACCGAGGGCTT
GTTACAACACTGGAGCTGGGGTTCGGGCACCAGTAGTTCAAGGGAGTGGCTCTCCGAA

TyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArg
8041 TATGTTGGGGCCCTTACCAATTCAAGGGGAGAACTGCGGCTATCGCAGGTGCCGC
ATACAACCCCGGGAGAACGGTTAAGTCCCCCTCTGACGCCGATAGCGTCCACGGCG

AlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCystyrIleLysAlaArg
8101 GCGAGCGCGCGTACTGACAACTAGCTGTGGTAACACCCCTCACTTGCTACATCAAGGCCCG
CGCTCGCCGATGACTGTGATCGACACCATGGGAGTGGAGTAGTTCCGGCC

FIG. 72W

AlaAlaCysArgAlaAlaGlyIleuGlnAspCysthrMetLeuValCysGlyAspAspIleu
8161 GCAGCCTGTCGAGCCGAGGGCTCCAGGAATGCACCATGCTCGTGTGGCGACGTTA
CCTCGGACAGCTCCGGCTCCGGAGTCCTGACGTGGTACCGACACACCGCTGCTGAAT

ValValIleCysGluSerAlaGlyValGlnGluaspAlaAlaSerLeuargAlaPheThr
8221 GTCGTTATCTGTGAAGCGGGGGTCCAGGAGCAGGGGAGCCCTGGGGTGTGGTCTTATGCTGAAC
CAGCAATAGACACTTGGCCCCCAGGT CCTCGGCCGCTCGGACTCTCGGAAGTGC

GluAlaMetThrArgTyrSerAlaProProGlyAspProProGlnProGlutYrasPleu
8281 GAGGCTATGACCAGGTACTCCGGCCCCCTGGGGACCCCCACAACCAAATACGACTTG
CTCCGATACTGGTCCATGAGGGGGGGACCCCTGGGGTGTGGTCTTATGCTGAAC

GluLeuIleThrSerCysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArg
8341 GAGCTCATAACATCATGCTCCAAACGTTCACTGGCCACAGACGGGCTGGAAAGAGG
CTCGAGTAGTTGAGTACGGAGGGTGCACAGTCAGGGGTGCTGCCGCGACCTTCTCC

ValTyTyrlLeuThrArgAspProThrThrProLeuAlaArgAlaAlatrpgluthrala
8401 GTCTACTACCTCACCCGGTGACCCCTACACCCCCCTCGCAGAGCTGGTGGGAGACAGCA
CAGATGATGGAGTGGCACTGGGATGTTGGGGAGGGCTCTGACGCCACCCCTCTGTCGT

ArgHisthrProValAsnSerTrpLeuGlyAsnIleMetPheAlaProThrLeuTrp
8461 AGACACACCTCCAGTCATACTGGCTAGGCAACATAATCATGTTGGCCCCACACTGTTG
TCTGTGTGAGGTCAAGGACCGATCCGTTGTATTAGTACAACGGGGTGTGACACC

FIG. 72X

AlaArgMetIleLeuMetThrIleSerPheSerValLeuIleAlaArgAspGlnLeuGlu
8521 GCGAGGATACTGATGACCCATTCTTAGGGCCTTATGCCAGGGACCGCTTGAA
CGCTCCTACTATGACTACTGGGTAAAGGAATCGCAGGAATCGGTCCCTGGTCGAACCT
8581 GlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuPro
CAGGCCCTCGATTGGAGATCTACGGGCCTGCTACTCCATAGAACCACTTGATCTACCT
GTCGGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTATCTGGTGAACTAGATGGA
ProIleLeuGlnArgLeuHisGlyLeuSerAlaPheSerLeuHisSerTyrSerProGly
8641 CCAATCATTCAAAGACTCCATGGCCTCAGGCCATTCTCACAGTTACTCTCCAGGT
GGTTAGTAAGTTCTGAGGTACCGGAGTCGGCTAAAGTGAGGTGTCAAATGAGAGGTCCA
GlutLeasnArgValAlaAlaCysLeuArgLysLeuGlyValProProLeuArgAlaTrp
8701 GAAATAATAGGGTGGCCGATGCCTCAGAAACTTGGGTACCGCCCTGCGAGCTTGG
CTTAATTATCCCCACCGGGTACGGAGTCTTTGAACCCCATTGGGGAACGCTCGAAC
ArgHisArgAlaArgSerValArgAlaArgLeuLeuAlaArgGlyGlyArgAlaAlaIle
8761 AGACACCGGGCCGGAGCGCTCCGGCCTAGGCTTCTGGCCAGGGAGGAGGGCTGCCATA
TCTGTGGCCGGCCCTCGCAGGCCGATCCGAAGACCGGTCTCCTCCGTCCCGACGGTAT
CysGlyLysTyrIlePheAsnTrpAlaValArgThrLysLeuThrProIleAla
8821 TGTGGCAAAGTACCTCTCAACTGGCAGTAAGAACAAAGCTCAAACACTCACTCCAAATAGCG
ACACCGTTCATGGAGAAGTTGACCCGTCATTCTGGTTCGAGTTGAGGTATGCC

FIG. 72Y

AlaAlaGlyGlnIleuAspLeuSerGlyTrpPheThrAlaGlyTyrSerGlyGlyAspIle
8881 GCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCAACGGCTGGCTACAGGGGGAGACATT
 CGGCACGGGTCTGACCTGAACAGGCCGACCAAGTGCCGACCGATGTCGCCCTCTGTAA

TyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
8941 TATCACAGCGTGTCTCATGCCGGCCGGCTGGATCTGGTTTGCCC
 ATAGTGTGGCACAGTAGTACGGCCGGCGACCTAGACCAAACGGG

1 GluPheGlyS rValIleProThrSerGlyAspValValValValAlaThrAspAlaLeu
 GAATTGGGTCCGTCATCCGACCAGCGCGATGTTGTCGTGGCAACCGATGCCCTC
CTTAAGCCCAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAG
 1 ECOR1, 7 NLALV, 8 AVA2 SAU96, 15 FOK1, 24 NSPB11, 26 FNU4H
 1, 52 SFAN1, 57 MNLL, 60 NLAL11,
 61 MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThrCysValThrGln
 ATGACCGGCTATACCGGCGACTCGACTCGGTGATAGACTGCAATACGTGTGTCACCCAG
TACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTC
 65 HPA11, 74 HPA11, 83 TAQ1, 85 HINFL, 90 HPH, 106 AFL111 MA
 E2, 112 MAE3, 113 HPH,
 121 ThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAsp
 ACAGTCGATTTCAGCCTTGACCCTACCTCACCATGAGACAATCACGCTCCCCAAGAT
TGTCAGCTAAAGTCGGAACTGGGATGGAAAGTGGTAACTCTGTTAGTGCAGGGGGTTCTA
 125 TAQ1, 149 HPH, 178 SFAN1,
 181 AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
 GCTGTCTCCCGCACTAACGTGGGGCAGGACTGGCAGGGGGAAAGCCAGGCATCTACAGA
CGACAGAGGGCGTGAGTTGCAGCCCCGTCCCTGACCGTCCCCCTCGGTCTAGATGTCT
 198 MAE2, 226 ECOR11 SCRF1, 230 SFAN1,
 241 PheValAlaProGlyGluArgProProAlaCysSerThrArgProSerSerValSerAla
 TTTGTGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCTGTGAGTGCC
AAACACCGTGGCCCCCTCGCGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGG
 246 BAN1 NLALV, 250 HPA11 NC11 SCRF1, 257 HAE11, 258 HH11, 2
 62 MNLL, 265 HPA11, 268 NSPC1, 269 NLAL11, 274 TAQ1, 276 HIN
 F1, 287 MNLL, 296 BSP1286,
 301 ArgIle
 CGAATTG
GCTTAAG
 302 ECOR1,
 361

FIG. 74

FIG. 75

Overlap with 6k

Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala

1 TTATCACAGCGTGTCTCATGCCCGCCCCGGCTGGATCTGGTTTGCCCTACTCCTGCTTGC
AATACTGTCGCACAGAGTACGGGCCGACCTAGACCAAAACGGATGAGGACGAACG

Ala G1y Val Gly Ile Tyr Leu Leu Pro Asn Arg Phe

61 TGCAGGGGTAGGCATCTACCTACCTCCTCCCCAACCGATGAAGGTTGGCTAAACACACTCCGGCC
ACGTCCCCCATCCGTAGATGGAGGGGTTGGCTACTTCCAACCCCATTGTGAGGCCGG

121 T
A

FIG. 76

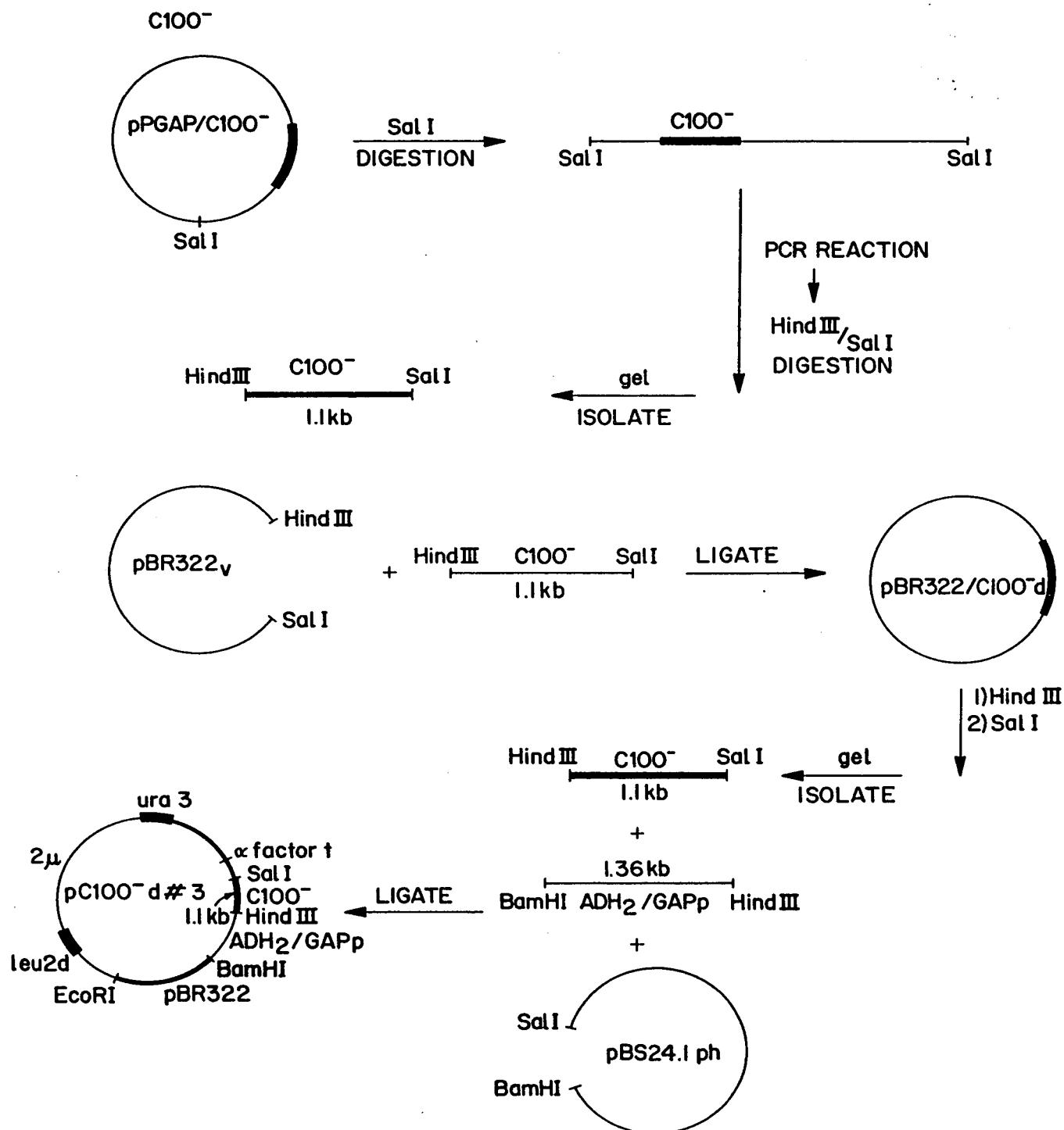


FIG. 77

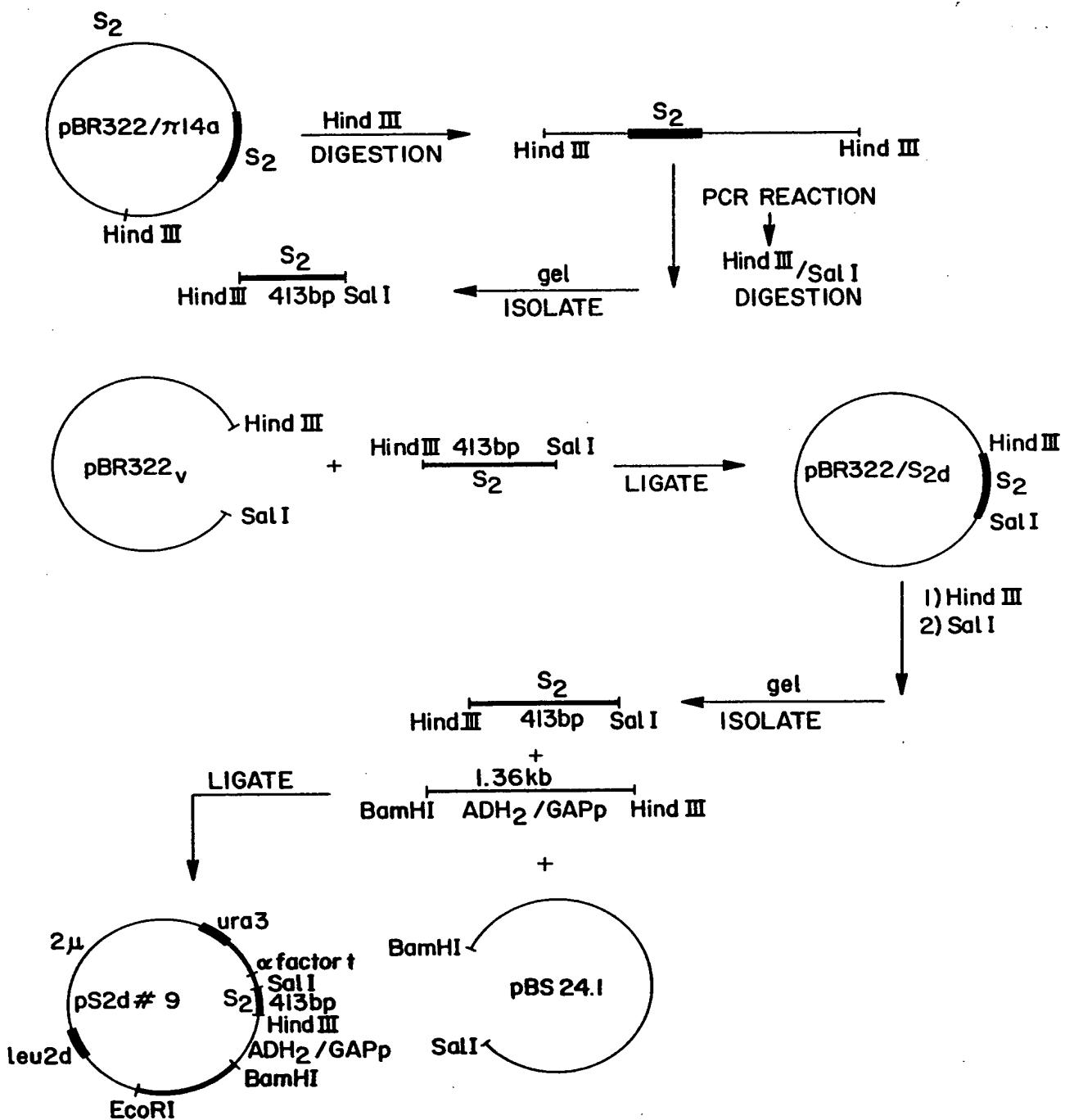


FIG. 78

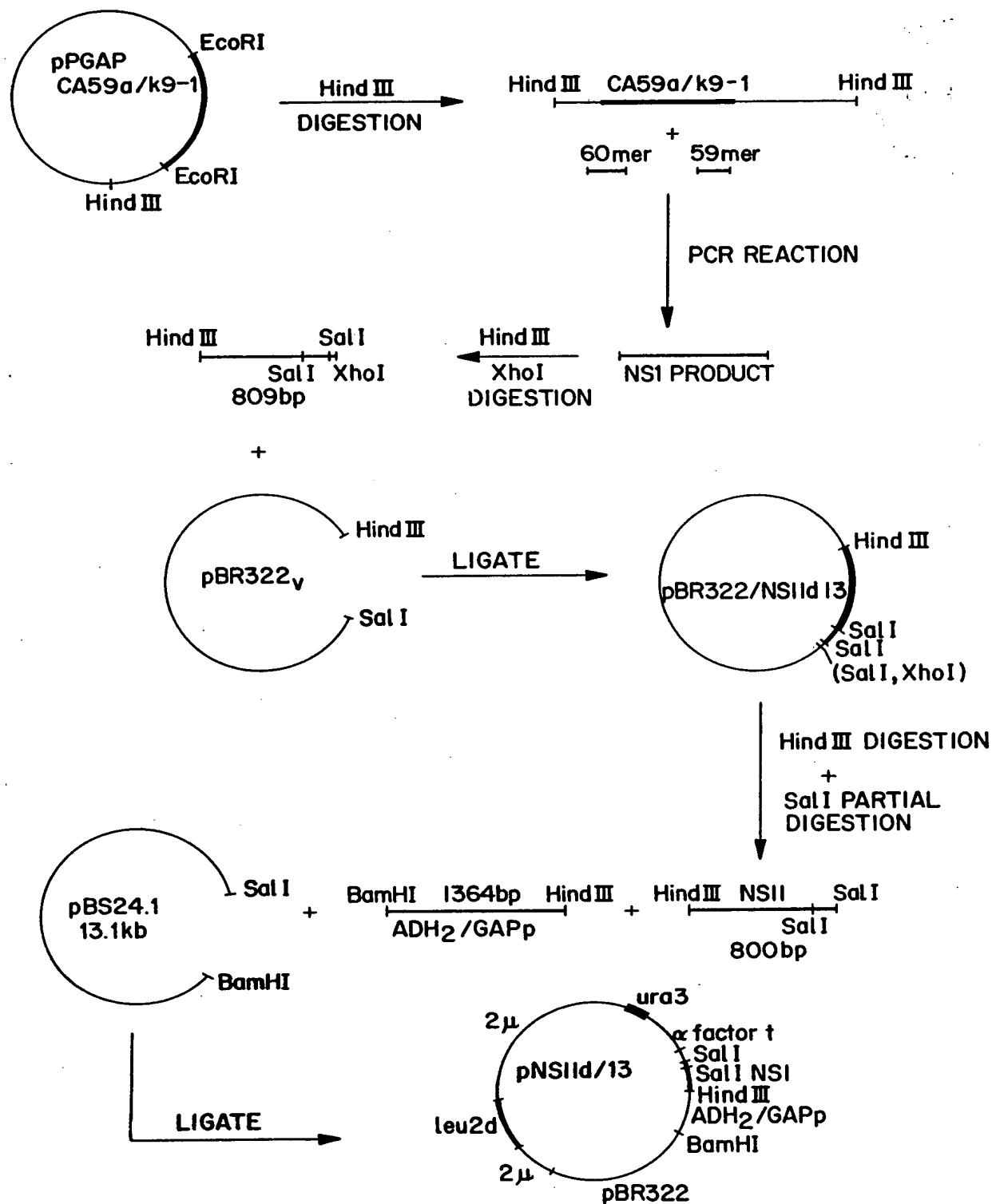


FIG. 79A

2 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
 GCGGTGGACTTATCCCTGTGGAGAACCTAGAGACAAACCATGAGGTCCCCGGTGTTCACG
 CGCCACCTGAAATAGGGACACCTCTGGATCTCTGGTACTCCAGGGGCCACAAGTGC
 29 MAE1, 40 NLA111, 43 MNLL, 45 AVA2 NLAIV SAU96, 49 NCIL SC
 RF1, 50 HPA11,
 62 AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
 GATAACTCCTCTCCACCAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCC
 CTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGG
 69 MNLL, 83 BSP1286, 92 ALU1, 97 ECOR11 SCRFL, 106 HPH, 109
 MNLL, 113 NLA111,
 122 ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
 ACAGGCAGCGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTG
 TGTCCCGTCGCGTTTCGGGTCCCAGGGCCGACGTATACGTCGAGTCCCGATATTCCAC
 126 BBV FNU4H1, 127 NSPB11, 129 FNU4H1, 145 AVA2 NLAIV SAU96
 , 148 NCIL SCRFL, 149 HPA11, 152 BBV FNU4H1, 156 NDE1, 161 B
 BV FNU4H1, 163 ALU1, 165 DDE1,
 182 LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
 CTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTGGTGCTACATGTCCAAGGCT
 GATCATGAGTTGGGAGACAAACGACGTTGTGACCCGAAACACGAATGTACAGGTTCCGA
 182 MAE1, 184 SCAL, 185 RSA1, 195 MNLL, 203 BBV FNU4H1, 228
 AFL111 NSPC1, 229 NLA111,
 242 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
 CATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATC
 GTACCCCTAGCTAGGATGTAGTCCCTGGCCCCACTCTGTTAATGGTGACCCGTCGGGTAG
 242 NLA111, 246 BIN1, 247 MBO1 SAU3A, 248 CLAL, 249 TAQ1, 25
 1 BIN1 MBO1 SAU3A, 264 AVA2 SAU96, 267 HPA11 NCIL SCRFL, 271
 HPH, 291 BBV FNU4H1,
 302 ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
 ACGTACTCCACCTACGGCAAGTCCCTGGCCACGGCGGGGTGCTCGGGGGCGCTATGAC
 TGCATGAGGTGGATGCCGTCAAGGAACGGCTGGCCACGAGCCCCCCCGGAATACTG
 302 MAE2, 304 RSA1, 340 BSP1286 HGIA, 343 AVA1, 350 HAE11, 3
 51 HHA1,
 362 IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
 ATAATAATTTGTGACGAGTGCCACCCACGGATGCCCACATCCATCTGGGGCATGGGCACT
 TATTATTAAAACTGCTACGGGTGGCTACGGGTTAGGTAACCGGTGAAACCGTAACCGTGAATACGTGA
 372 MAE3, 391 FOK1, 392 SFAN1, 399 FOK1,
 422 ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
 GTCCTGTACCAAGGCAGAGACTGCGGGGGCGGAGACTGGTTGTGCTCGCCACCGCCACCCCT
 CAGGAACCTGGTTCGTCTGTACGCCCCCCGCTGTACCAACCGAGCGGTGGCGGTGGGA
 431 TTHIII2, 435 ALWN1, 461 BSP1286 HGIA, 479 MNLL,

FIG. 79B

482 ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
 CCGGGCTCCGTCACTGTCCCCATCCAACATCGAGGAGGTTGCTCTGTCACCACCGGA
GGCCCGAGGCAGTGAACACGGGTAGGGTTGTAGCCTCCCAACGACAGAGACAGGTGGGGC
 482 HPA11 NC11 SCRF1, 484 BAN11 BSP1286, 485 NLALV, 491 MAE3
 , 497 BSP1286, 503 FOK1, 513 TAQ1, 515 MNLL1, 518 MNLL1, 537 H
 PA11,
 542 GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
 GAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTC
CTCTAGGGAAAATGCCGTTCCGATAGGGGAGCTCATTAGTCCCCCTCTGTAGAG
 543 XHO2, 544 BIN1 MBO1 SAU3A, 571 MNLL1, 573 TAQ1,
 602 IlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
 ATCTTCTGTCATTCAAAGAAGAAGTGCAGAACACTGCCGCAAAGCTGGTCGCATTGGGC
TAGAAGACAGTAAGTTTCTTCACGCTGCTTGAGCGCGTTCGACCACCGTAACCCG.
 603 MBO11, 619 MBO11, 638 FNU4H1, 645 ALU1, 660 SFAN1,
 662 IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
 ATCAATGCCGTGGCCTACTACCGCGTCTTGACGTCCGTATCCGACCAGCGGCAT
 TAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTGCCGCTA
 672 HAE1, 673 HAE111, 682 NSPB11 SAC2, 683 THA1, 693 AFL111
 MAE2, 703 FOK1, 712 NSPB11, 714 FNU4H1,
 722 ValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
 GTTGTGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTG
 CAACAGCAGCACCGTTGGTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCAC
 740 SFAN1, 745 MNLL1, 748 NLAL11, 753 HPA11, 762 HPA11, 771 T
 AQ1, 773 HINF1, 778 HPH,
 782 IleAspCysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThr
 ATAGACTGCAATACGTGTCACCCAGACAGTCGATTTCAGCCTGACCCTACCTTCACC
 TATCTGACGTTATGCACACAGTGGGTCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGG
 794 AFL111 MAE2, 800 MAE3, 801 HPH, 813 TAQ1, 837 HPH,
 842 IleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThr
 ATTGAGACAATCACGCTCCCCAAGATGCTGTCTCCCGACTCAACGTGGGGCAGGACT
 TAACTCTGTTAGTGCGAGGGGGTTACGACAGAGGGGTGAGTTGCAGCCCCGTCCTA
 866 SFAN1, 886 MAE2,
 902 GlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMet
 GGCAGGGGGAAGCCAGGCATCTACAGATTGTGGCACGGGGAGCGCCCTCCGGCATG
 CGTCCCCCTTCGGTCCGTAGATGTCTAAACCGTGGCCCCCTCGGGGAGGCCGTAC
 914 ECOR11 SCRF1, 918 SFAN1, 934 BAN1 NLALV, 938 HPA11 NC11
 SCRF1, 945 HAE11, 946 HHAL, 948 BGL1, 951 MNLL1, 954 HPA11, 9
 57 NSPC1, 958 NLAL11,
 962 PheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThr
 TTCGACTCGTCCGTCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACG
AAGCTGAGCAGGCAGGGAGACACTCACGATACGTCCGACACGAACCAACTCGGAGTGC
 963 TAQ1, 965 HINF1, 976 MNLL1, 992 HGA1, 1003 TTHIII2, 1013
 BAN11 BSP1286 HGIA SAC1, 1014 ALU1,
 1022 ProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCys
 CCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGTGTG
 GGGCGGTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACG

FIG. 79C

1051 RSA1, 1054 NLA111, 1063 AVA1 NC11 SCRF1 SMA1, 1064 HPA1
 1 NC11 SCRF1, 1081 ECOR11 SCRF1,

1082 GlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHis
 CAGGACCACATCTTGAATTGGGAGGGCGTCTTACAGGCCTCACTCATATAAGATGCCAC
GTCCTGGTAGAACTAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTG
 1084 AVA2 SAU96, 1103 MNLL, 1106 AHA11, 1107 HGA1, 1117 HAE1
 ST1, 1118 HAE111, 1120 MNLL, 1133 SFAN1,
 1142 PheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAla
 TTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTCCCTACCTGGTAGCGTACCCAAGCC
 AAAGATAGGGTCTGTTCGTTCACCCCTTTGGAAGGAATGGACCATCGCATGGTTCG
 1183 ECOR11 SCRF1, 1192 RSA1, 1201 DRA3,
 1202 ThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeu
 ACCGTGTGCGCTAGGGCTCAAGCCCCCCCCATCGTGGGACCAGATGTGGAAGTTTTG-
TGGCACACGCGATCCCGAGTTCGGGAGGGGGTAGCACCCCTGGTCTACACCTCAAAAC
 1209 HHA1, 1212 MAE1, 1215 BAN11 BSP1286, 1226 MNLL, 1239 NL
 AlV, 1240 AVA2 SAU96, 1256 THIII2, 1261 HINFL,
 1262 IleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaVal
 ATTCGCCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGCGCTGTT
 TAAGCGGAGTTCGGGTGGAGGTACCCGGTGTGGGGACGATATGTCTGACCCCGACAA
 1267 MNLL, 1279 MNLL, 1282 NCO1, 1283 NLA111, 1286 SAU96, 12
 87 HAE111, 1313 HAE11, 1314 HHA1,
 1322 GlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAla
 CAGAATGAAATCACCCCTGACCGACCCAGTCACCCAAATACATCATGACATGCATGTCGGC
 GTCTTACTTAGTGGGACTGCGTGGGTCAGTGGTTATGTAGTACGTTACAGCCGG
 1332 HPH, 1339 HGA1, 1349 MAE3, 1350 HPH, 1363 NLA111, 1367
 NSPC1, 1368 NLA111, 1369 AVA3 NSII, 1371 NSPC1, 1372 NLA111,
 1377 CFR1 XMA3, 1378 HAE111,
 1382 AspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAla
 GACCTGGAGGTCGTCAGACCCTGGGTCGTCGTTGGCTGGCTTTGGCC
CTGGACCTCCAGCGCTCGTTGGACCCCGCGAGGGACCCGGACGGAAACCCGG
 1384 ECOR11 SCRF1, 1385 GSU1, 1388 MNLL, 1394 MAE3, 1399 BSP
 1286 HGIA, 1404 ECOR11 SCRF1, 1409 BSP1286 HGIA, 1419 FNU4H1,
 , 1421 AHA11, 1422 HGA1, 1426 ECOR11 SCRF1, 1430 BBV FNU4H1,
 1437 CFR1, 1438 HAE111, 1439 FNU4H1, 1441 THAI,
 1442 AlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLys
 GCGTATGCCTGTCAACAGGGCTGCGTGGTCATAGTGGGCAGGGTCGCTGGCTTTGGCC
CGCATAACGGACAGTTGTCCACCGACCACCGTCCACAGCAACAGGGCCCTTC
 1453 HINC11, 1461 BBV FNU4H1, 1494 HPA11 NC11 SCRF1, 1501 NA
 El,
 1502 ProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCys
 CCGGCAAATCAACCTGACGGGAAAGTCCCTTACCGAGGAGTTCGATGAGTGGAAAGGTGC
GGCCGTTAGTATGGACGTCCCTTCAGGGAGATGGCTCTCAAGCTACCTACCCTTCTCACG
 1502 HPA11, 1528 MNLL, 1542 TAQ1, 1553 MB011, 1558 BSP1286 H
 GIA,
 1562 SerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLys
 TCTCAGCACTTACCGTACATCGAGGCAAGGGAATGTGCTCGGCCGAGCAGTTCAAGCGAAAG
AGATCGGTGAATGGCAGTAGCTCGTTCCCTACTCAGGAGCGGCTCGTCAAGTTCGTCTTC
 1563 DDE1, 1576 RSA1, 1581 TAQ1, 1590 FOK1, 1594 SFAN1, 1612

FIG. 79D

TTHIII2, 1621 HAE111 SAU96,

1622 AlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGln
 GCCCTCGGCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCCTGCTGTCCAG
 CGGGAGCCGGAGGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTC
 1624 MNLL, 1628 HAE111, 1630 MNLL, 1634 PST1, 1639 TTHIII1,
 1642 THA1, 1643 HGA1, 1658 MNLL,
 1682 ThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGly
 ACCAACTGGCAAAAACTCGAGACCTCTGGCGAAGCATATGTGGAACTTCATCAGTGGG
 TGGTTGACCGTTTGAGCTCTGGAAAGACCGCTTCGTATACACCTGAAGTAGTCACCC
 1697 AVA1 XH01, 1698 TAQ1, 1718 NDE1,
 1742 IleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMet
 ATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCGCCATTGCTTCATTGATG
 TATGTTATGAACCGCCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAACGTAACTAC-
 1762 HINC11, 1768 BBV FNU4H1, 1772 ECOR11 SCRF1, 1775 BSTE2,
 1776 MAE3,
 1802 AlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIle
 GCTTTACAGCTGCTGTCACCAGCCCACTAACACTAGCCAAACCCCTCCTCAACATA
 CGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTGGGAGGAGAAGTTGTAT
 1809 ALWN1 NSPB11 PVU11, 1810 ALU1, 1811 BBV FNU4H1, 1817 MA
 E3, 1818 HPH, 1836 MAE1, 1846 MNLL, 1849 MNLL, 1851 MB011,
 1862 LeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGly
 TTGGGGGGGTGGGTGGCTGCCAGCTGCCGGCGTGCGCTACTGCCCTTGTCGGC
 AACCCCCCCCACCCACCGACGGGTCGAGCGGCGGGCACGGCGATGACGGAAACACCG
 1877 BBV FNU4H1, 1884 ALU1, 1889 FNU4H1, 1895 NC11 SCRF1, 18
 96 HPA11, 1898 BAN1 NLALV, 1901 FNU4H1, 1919 HAE11, 1920 HHA
 1,
 1922 AlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIle
 GCTGGCTTAGCTGGCGCCGCATCGGCAGTGGACTGGGAAGGTCTCTCATAGACATC
 CGACGGAAATCGACCGCGCCGGTAGCCGTCACAACTGACCCCTTCCAGGAGTATCTGTAG
 1927 DDE1, 1930 ALU1, 1934 AHA11 BAN1 HAE11 NAR1 NLALV, 1935
 HHA1, 1937 FNU4H1, 1966 AVA2 SAU96, 1969 MNLL, 1978 FOK1,
 1982 LeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGly
 CTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGAGCGGT
 GAACGTCCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTTAGTACTCGCC
 1995 HHA1, 1996 THA1, 2010 BAN11 BSP1286 HGIA SAC1, 2011 ALU
 1, 2021 BSM1, 2029 MB01 SAU3A, 2032 NLAL11, 2039 HPH,
 2042 GluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAla
 GAGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCTCTCGCCCGAGCC
 CTCCAGGGAGGTGCCTCTGGACCAGTTAGATGACGGCGTAGGAGAGCGGGCCTCGG
 2042 MNLL, 2044 AVA2 NLALV SAU96, 2049 MNLL, 2057 MNLL, 2059
 AVA2 SAU96, 2060 TTHIII1, 2062 ECOR11 SCRF1, 2083 FOK1, 208
 6 MNLL, 2093 NC11 SCRF1, 2094 HPA11, 2096 NLALV, 2097 BAN11
 BSP1286, 2101 MNLL,
 2102 LeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGly
 CTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTGGCCGGCGAGGG
 GAGCATCAGCCGCACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCGCTCCCC
 2123 BBV FNU4H1, 2134 HHA1, 2136 NAE1, 2137 HPA11, 2142 MAE2
 , 2147 HAE111 SAU96, 2149 AVA1 NC11 SCRF1 SMA1, 2150 HPA11 N

FIG. 79E

C11 SCRF1, 2156 MNLL,

2162 AlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
GCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCCTCCGGGGAAACCATGTTCCCC
CGTCACGTCACCTACTGGCCGACTATCGGAAGCGGAGGGCCCCTTGGTACAAAGGGG

2172 FOK1, 2179 HPA11, 2196 MNLL, 2199 AVA1 NC11 SCRF1 SMA1,
2200 HPA11 NC11 SCRF1, 2205 NLALV, 2210 NLAL11,

2222

FIG. 80A

Human 23

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyArgAla
1 GGCTTCCCGACCTCATGGGTACATACCGCTCGTCGGCCCTCTGGAGGCCGTGCC
ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyraLathGlyAsn
61 AGGGCCCTGGCCACGGCGTCTGGAGAACGGCTGAACAGGGAAC
CG A
LeuProGlyCysSerPheSerIlePheLeuIleLeuSerCysLeuThrValPro
121 CTTCTGGTGCCTTCTATCTTCCCTACTCTTGCTGACCGTGGCC
T GA
AlaSerAlaTyrGlnValArgAsnSerThrGlyLeuTyrrHisValThrAsnAspCysPro
181 GCTTCAGCCTACCAAGTGGCAAACCTAACCTACGGGCTTACCATGTCACCAATGATTGCCCT
AsnSerSerIleValTyrGluAlaAlaAspAlaIleLeuHisAlaProGlyCysValPro
241 AACTCGAGTATTGTGTACCGAGGGCCGATGCCATGCCATCTGCACGGTCCGGGTGTGCCCT
T C
CysValArgGluAspAsnValSerArgCysTrpValAlaValThrProThrValAlaThr
301 TGCCTTCCGAGGATAACGTCTCGAGATGTTGGGTGACCCCCACGGTGGCCACC
G T
LysAspGlyLysLeuProThrThrGlnLeuArgArgHisIleAspLeuValGlySer
361 AAGGACGGCAAACCTCCCACACGGCTCACATCGATCTGCTGTCGGGAGC
AlaThrLeuCysSerAlaLeuTyrrValGlyAspLeuCysGlySerIlePheLeuValGly
421 GCCACCCCTCTGCTCGGCCCTACGTGGGGACCTTGTCCATCTTCTGTGGT
T C
GlnLeuPheThrPheSerProArgArgHistrpThrThrGlnAspCysAsnCysSerIle
481 CAACTGTTACCTTACCTCTCTCCAGGGCCACTGGACGGAACTGCAACTGTTCTATC
C

FIG. 80B

TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerPro
541 TATCCCGGCCATAACGGTCACCGCATGGATATGATGAAGCTGGTCCCCT G

ThrAlaAlaLeuValValAlaGlnLeuLeuArgIleProGlnAlaLeuAspMetIle
601 ACGGGGCCATTGGTAGCTCAGCTGCTCCGGATCCACAAGCCATCTGGACATGATC G AG

AlaGlyAlaHistrpGlyValLeuAlaGlyMetAlaTyrPheSerMetValGlyAsnTrp
661 GCTGGTGCTCACTGGGACTCCTGGGGCATGGCTATTCTCCATGGTGGGAACCTGG G

AlaLysValLeuValValLeuLeuPheAlaGlyValAspAlaGluThrHisArgThr
721 GCGGAAGCTGGTAGTGCCTCTATTGGCCGGCTCCACCCGGAAACCAACCGTACCG G

GlyGlySerAlaAlaArgSerThrAlaGlyValAlaSerLeuPheThrProGlyAlaArg
781 GGGGAAAGTGCCCCGGCAGCACGGCTGGAGTTGCTAGTCTCTCACACCAGGCCCTAGG C T A

C^lnAsnIleGlnLeuIleAsnThrAsnGlySerTrpHisIleAsnSerThrAlaLeuAsn
841 CAGAACATCCAGCTGATCAAACACCAACGCCAGTTGGCACATCAAATAGTACGGCCTTGAA AT

CYSAsnAspSerLeuThrThrGlyTrpLeuAlaGlyLeuPheThrHisIleAsn
901 TGCAATGACAAGCCTTACCAACCGGCTGGTTAGGGGGCTTCTATCACCAATAATCAAC A

SerSerGlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAlaGln
961 TCTTCAGGCTGTCCCCGAGGGTGGCCACGCTGGGACCCCTCACCGATTTGCCAGG G A

FIG. 81A

Human 27

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla
1 GGCTTCGGCCGACCTCATGGGTACATTCCGCTCGGGCCTTGCGGCCGCTGCC
ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyraThrGlyAsn
61 AGGGCCCTGGCGCATGGCGTCCGGTCTCGGAAGACGGGTGAACATGCAACAGGGAAC
LeuProGlyCysSerPheSerIlePheLeuAlaLeuSerCysLeuThrValPro
121 CTTCTGGTTGCTCTTCTCTATCTCCTCTGGCTCTGCCTTGCGCTGCC
AlaSerAlaTyrGlnValArgAsnSerSerGlyIleTyrHisValThrAsnAspCysPro
181 GCATCGGCCTACCAAGTACGCAACTCTGGGCATTACCATGTCACCAATGATGCC
AsnSerSerIleValTyrGlutHalaAspThrIleLeuHisSerProGlyCysValPro
241 ATTGAGTATTGTTGTAACGAGACGGCCGACACCATTACACTCTCGGGTGTCCCT
CysValArgGlyAsnAlaSerLysCystrpValProValAlaProThrValAlaThr
301 TCGGTTGGCGAGGGTAACGCCCTCGAAATGTTGGGTGCCGGTAGCCCCACAGTGGCACC
ArgAspGlyAsnLeuProAlaThrGlnLeuArgArgHisIleAspLeuValGlySer
361 AGGGACGGCAAACCTCCCCGCAACGCCAGCTCGACGTCACATCGATCTGCTTGCGGAGT
G G
A A
AlaThrLeuCysSerAlaLeuTyrIleValGlyAspLeuCysGlySerValPheLeuValGly
421 GCCACCCCTTGCTCGGCCCTCATGTTGGGACTTGTGGGTCTGCTTCTTGCGT
C C
GlnLeuPheThrPheSerProArgArgHistpThrGlnAspCysAsnCysSerIle
481 CAACTGTTCACTTCTCCCCAGGCCACTGGACACGCCAGATGCAACTGCTCTATC

FIG. 81B

TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetAsnTrpSerPro
541 TACCCCGGCCATAACGGACACGGCATGGATATGATGATGAACTGGTCCCCT
601 ThralAlaAlaLeuValMetAlaGlnLeuLeuArgIleProGlnAlaLalleLeuAspMetIle
G
AlaGlyAlaHistrpGlyValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrp
661 GCTGGTGCCTCACTGGGGACTCTAGCCCCATAGCGTATTCTCCATGGTGGGAACCTGG
AlaLysValLeuValValLeuLeuPheAlaGlyValAspAlaThrThrTyrThrThr
721 GCGAAGCTCCTGGTGTCTTCCTGTTCCCGCTCGATGCCAACCTATACCAC
GlyGlyYasnAlaAlaArgThrThrGlnAlaLeuThrSerPheSerProGlyAlaLys
781 GGGGGAATGCTGCCAGGACCAACGGCAGGCCACCACTTTCAAGCCAGGCCAG
GlnAspIleGlnLeuIleAsnThrAsnGlySerTrpHisIleAsnArgThrAlaLeuAsn
841 CAGGATATCCAGCTGATCACACCAACGGCAGTGGCACATCAATGGCACGGCTTGAA
G
T
G
CysAsnAlaSerLeuAspThrGlyTrpValAlaGlyLeuPheTyrTyrHisLysPheAsn
901 TGTAAATGCGAGCCTCGACACCTGGCTGGTAGCGGGCTCTTCTATACCAAAATCAAC
T
G
C
SerSerGlyCysProGluArgMetAlaSerCysArgProLeuAlaAspPheAspGln
961 TCTTCAGGCCGCCCCGAGGATGCCAGCTAGCCCCCTGCCATTGCGACAGG

1. human 27 2. HCV 1 3. human 23

FIG. 82A

1 CGGCTTGCCTGACCTCATGGGTACATTCCGCTCGTGGCCTtCGGGCTtCTGGGGCTGCCAGGGCCCTGGC
1 CGGCTTGCCTGACCTCATGGGTACATACCGCTCGTGGCCTCTGGGGCTTGAGGGCTGCCAGGGCCCTGGC
1 CGGCTTGCCTGACCTCATGGGTACATACCGCTCGTGGCCTCTGGGGCTTGAGGGCTGCCAGGGCCCTGGC
73 GCATGGGTCCGGTTCTGGAAGACGGGTGAACATATGCAACAGGGAACCTTCCAGCTTCTGGTGTCTTCTCTAT
73 GCATGGGTCCGGTTCTGGAAGACGGGTGAACATATGCAACAGGGAACCTTCCAGCTTCTGGTGTCTTCTCTAT
73 GCACGGTCCGGTTtTGAAGACGGGTGAACATATGCAACAGGGAACCTTCCAGCTTCTGGTGTCTTCTCTAT
145 CTTCCCTCTGGCtCTGCTCTGGCTTGTGCCCCGCAtCGCCAAGTtCGGAACTCCtCGGGcat
145 CTTCCCTCTGGCCTGGCTCTGGCTtTGACTtGTGCCCCGCTTGTGCCCCGATGCCATCCTGCACaCTCC
145 CTTCCCTCTGGCCTTAACtCGAGTATTGTGTACCGAGGGGGGATGCCATCCTGCACaCTCC
145 CTTCCCTCTGGCCTActCTTGCCTGACCGTGGCCGCTtCaGCCtACAGTGGCAACtCACGGGCT
217 TTACCAtGTCAACCAATGATTGGCTTAATTGAGTATTGTGTACGAGAAGGGGACaccatCTtACACTCTCC
217 TTACCAcGTCAACCAATGATTGGCTTAACtCGAGTATTGTGTACCGAGGGGGGATGCCATCCTGCACaCTCC
217 TTACCAtGTCAACCAATGATTGGCTTAACtCGAGTATTGTGTACCGAGGGGGGATGCCATCCTGCACgCTCC
289 GGGGTGtGTCCCTTGGTTGGGtAACGGtACGGGtACGGGtACGGGtACGGGtACGGGtACGGGtACGGG
289 GGGGTGCGTCCCTTGGGtTCGAGGtAGGGGtACGGGtACGGGtACGGGtACGGGtACGGGtACGGG
289 GGGGTGtGTCCCTTGGGtTCGAGGtACGGGtACGGGtACGGGtACGGGtACGGGtACGGGtACGGG

FIG. 82B

361 CAGGGACGGCAACCTCCCCGCAACGCAGCTCGACGTCTGCTGGGAGtGCCACCCttTG
361 CAGGGATGGCAAACCTCCCCGAGCGAGCTTCGACGTCACTGARCTGCTRGTCGGAGGCCACCCtTG
361 CAAGGACGGCAAACCTCCCCAACAGCAGTCACATCGATCTGCTTGTGGGGtCAACTGTTCACTtTCTCCCCAG
433 CTCGGCCCTCATGTTGGGAGCTTGTGGGTCtGCTCTGTCGGGTCtGCTCTGTCGGGtCAACTGTTCACTtTCTCCCCAG
433 tTCGGCCCTCATGTTGGGAGCTTGTGGGTCatCTTCTGTCGGGTCtGCTCTGTCGGGtCAACTGTTCACTtTCTCCCCAG
505 GCGCCACTGGACAAACGCCAAGAtGCAACTGCTCTATCTACCCGGCAATAACGGGacACCGCATGGCATG
505 GCGCCACTGGGACGGCAAGgtGCAATTGCTCTATCTACCCGGCAATAACGGGtCACCGCATGGCATG
577 GGATATGATGATGAACTGGTCCCtACAgCaGGCtGGTAATGGCTCAGGtGtCAGGATCCCCGCAAGCCAT
577 GGATATGATGATGAACTGGTCCCtACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCACAAGCCAT
577 GGATATGATGAACTGGTCCCtACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCACAAGCCAT
649 CTGGACATGATGGTCCCtACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCACAAGCCAT
649 CTGGACATGATGGTCCCtACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCACAAGCCAT
649 CTGGACATGATGGTCCCtACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCACAAGCCAT
721 GGCGAAGGTCTGGTAGTGTGCTTGTGTTGCGGCGTCGAtGGCAACCCtataccACCGGGGGtAAAGTGC
721 GGCGAAGGTCTGGTAGTGTGCTTGTGTTGCGGCGTCGAtGGCAACCCtataccACCGGGGGtAAAGTGC
721 GGCGAAGGTCTGGTAGTGTGCTTGTGTTGCGGCGTCGAtGGCAACCCtataccACCGGGGGtAAAGTGC

793	tGCCaggACCacGCAgGCTcaccAGtTttTCagCCAGGGCCAAGCAGGAttatCCAGCTGATCAACAC		
793	CggCCACACTgtGtCTGGATTGTAGCCTCTGACCCAGGGCCAAGCAGGAACGtCCAGCTGATCAACAC		
793	CGCCCGAAGcacGGCTGGAGTTGCTAGtCTCTCACCCAGGGCtAGGCAGAACatCCAGCTGATCAACAC		
865	CAACGGCAGTTGGCACatCAATCGCACGGCCTtGAACtGtAATGCGAGCCTCgACACTGGCTGGgtatGCCGGGG		
865	CAACGGCAGTTGGCACCTCAATAAGCACGGCCCTGAACtGCAATGAtAGCCTCAAACACGGCTGGTTtgGCCAGG		
865	CAACGGCAGTTGGCACatCAATAAGtACGGCCTtGAACtGCAATGACAGGCCttACCAACGGCTGGTTtatGCCGGG		
937	GCTCTTCTATtACCAAAactCAACTCTTCAAGGCTGCCGAGAGGtaTgGCCAGGTGtaGqGCCCTtgcGCCGA		
937	GCTTTCTATCACCACAAGtTCAACTCTTCAAGGCTGTCtGAGGGtTAAGCCAGGTGCCGACCCCTTACCGGA		
937	GCTTTCTATCACCATAAAatTCACCTAAACTCTTCAAGGCTGTCtGAGGGtTGGCCAGGCTGCCGACCCCTTACCGGA		

1009	TTTCGACCCAGG	*****
	*****	*****
1009	TTTTGACCCAGG	*****
	*****	*****
1009	TTTTGCCCCAGG	*****
	*****	*****

FIG. 82C

FIG. 83

1	GFADLMGYIPLVGAPLGGAAARALAAHGVRYVLEDGVNYATGNLPGCSFSIFTLLALLSCLTVVASAYQVRNSSGI		
1	GFADLMGYIPLVGAPLGGAAARALAAHGVRYVLEDGVNYATGNLPGCSFSIFTLLALLSCLTVVASAYQVRNSTGL		
1	GFADLMGYIPLVGAPLGGAAARALAAHGVRYVLEDGVNYATGNLPGCSFSIFTLLALLSCLTVVASAYQVRNSTGL		
73	YHVTNDCPNSSTVYEADAILHtPGCVPCTREGNASRCWVAVTPTVATRDGKLPATQLRHDIDLVLGSATLC		
73	YHVTNDCPNSSTVYEADAILHtPGCVPCTREGNASRCWVAVTPTVATRDGKLPATQLRHDIDLVLGSATLC		
73	YHVTNDCPNSSTVYEADAILHtPGCVPCTREGNASRCWVAVTPTVATRDGKLPATQLRHDIDLVLGSATLC		
145	SALYVGDLCGVFLYGOFLTFSPRRHWTQdCNCSIYPGHITGHRMAWDMMMNWSPTaALVMAQOLLRIPOQAI		
145	SALYVGDLCGVFLYGOFLTFSPRRHWTQdCNCSIYPGHITGHRMAWDMMMNWSPTaALVMAQOLLRIPOQAI		
145	SALYVGDLCGVFLYGOFLTFSPRRHWTQdCNCSIYPGHITGHRMAWDMMMNWSPTaALVVAQOLLRIPOQAI		
217	LDMIAGAHGVLAGIAYFSMVGNTWAKVLYVVLFLAGVDAATTGGNAarttqaltSffSPGAKQdiQLINT		
217	LDMIAGAHGVLAGIAYFSMVGNTWAKVLYVVLFLAGVDAETHVTGGSAaghTvSfSSLapGAkQnVOLINT		
217	LDMIAGAHGVLAGIAYFSMVGNTWAKVLYVVLFLAGVDAETHVTGGSAaqrstagaSffPGATONiQLINT		
289	NGSWHINRTALNCNaSLdITGWVAGLFYYHKFNSSGCPERTASCRPLaDFDQ		
289	NGSWHINSTALNCNDSLntGWLAGLFYHHKFNSSGCPERLASCRPLTDDEQ	1.	human 27
289	NGSWHINSTALNCNDSLntGWLAGLFYHHKFNSSGCPERLASCRPLTDDEQ	2.	HCV 1
289	NGSWHINSTALNCNDSLntGWLAGLFYHHKFNSSGCPERLASCRPLTDDEQ	3.	human 23

FIG. 84

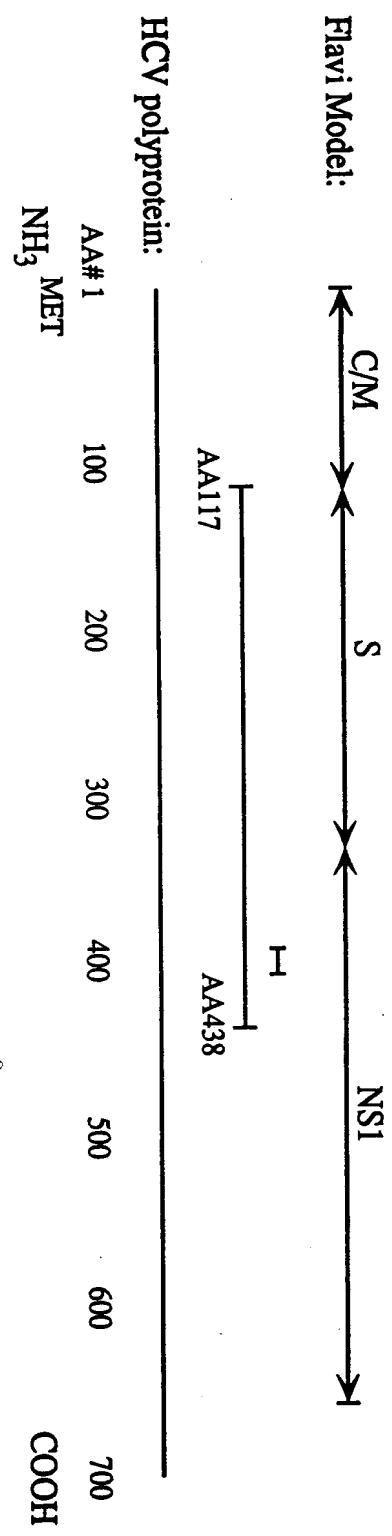


FIG. 85A

1 1. ssThorn#8.r (1-587)
1 2. SSEC1#2.r (1-587)
1 3. SSHCTL18#7.r (1-587)
1 4. env1.hcv (1-1657)

GA
GA
GA

289 ggggtggggatggctactgtctcccggtcgccctagctggggccccacagaccccggttagg

3 ATTCCGCAATTGGGTAAGGTCATCGATAACCTTACGTGCCGCTCATGGGTACATCCGCTC
3 ATTCCGCAATTGGGTAAGGTCATCGATAACCTTACGTGCCGCTCATGGGTACATCCGCTC
3 ATTCCGCAATTGGGTAAGGTCATCGATAACCTTACGTGCCGCTCATGGGTATATACCGCTC
361 tcgcGCCAAATTGGTAAGGTCATCGATAACCTTACGTGCCGCTCATGGGTACATACCGCTC

75 GTCGGGCCCTCTGGggggCTGCCAGGGCCATGGGCCTGGGTTCTGGAAGACGGCGTGAA
75 GTCGGGCCCTCTGGGAGGGCGCTGCCAGGGCCATGGGCATGGGTTCTGGAAGACGGCGTGAA
75 GTCGGGCCCTCTGGGAGGGCGCTGCCAGGGCCATGGGTTCTGGAAGACGGCGTGAA
433 GTCGGGCCCTCTGGGAGGGCGCTGCCAGGGCCATGGGTTCTGGAAGACGGCGTGAA

FIG. 85B

147 TATGCAACAGGAACCTTCCCTGGTTGCTCTTCTCTTCCTTGCCCTCTTGCTCTTGcTG
147 TATGCAACAGGAACCTTCCCTGGCTTGTCTTCTTGCTCTTGCTCTTGACTTG
147 TATGC CAGGGAACCTTCCCTGGTTGCTCTTCTCTTGCTCTTGCTCTTGACTTG
505 TATGCAACAGGGAACCTTCCCTGGCTCTTCTTGCTCTTGCTCTTGACTTG
219 CCCGCTTCAGCCTACCAAGTGGCAACTCCGGCTTACCATGTCACCAATGATTGCCCCAACTCGAGT
219 CCCGCTTCAGCCTACCAAGTGGCAACTCCGGCTTACCATGTCACCAATGATTGCCCCAACTCGAGC
219 CCCGCTTCAGCCCACCAAGTGGCAACTCCGGCTTACCATGTCACCAATGATTGCCCCAACTCGAGT
577 CCCGCTTCAGCCTACCAAGTGGCAACTCCACGGCTTACCAAGTCAACCGCTTACCATGATTGCCCCAACTCGAGT
291 ATTGTGTTACGAGGGCCGATGGCTATCCCTGCACGCTCCGGGTGTCGCTTGCGTTTCGCGGTTACGCC
291 ATTGTGTTACGAGGGCCGATGCCATCCCTGCACACTCCGGGTGTCGCTTGCGTTACGAGGGCAACGTC
291 ATTGTatACGAAAGGGCCGACGCCATCCCTGCACACTCCGGGTGTCGCTTGCGTTACGAGGGCAACGTC
649 ATTGTgtACGAGGGCCGATGCCATCCCTGCACACTCCGGGTGTCGCTTGCGTTACGAGGGCAACGCC
363 TCGAGGTGTTGGGTGGCGATGACCCCCACGGTGGCCGAGGGCAAGGGCAAGCTGGCA
363 TCGAGGTGTTGGGTGGCGATGCCACGGTGGCCACGGGCAAGGGCAAGCTTCGA
363 TCGAGGTGTTGGGTGGCGATGCCACGGGCAAGGGATGGCAAACCTCCCAACGGCAGGCTTCGA
721 TCGAGGTGTTGGGTGGCGATGACCCCCACGGTGGCCACGGGATGGCAAACCTCCGAGGGCAAGCTTCGA

435 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGCTCGGCCCTCTACGTGGGACCTGTGGGGTCC
435 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGCTCGGCCCTCTACGTGGGACCTGTGGGGTCT
435 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGCTCGGCCCTCTACGTGGGACCTGTGGGGTCT
793 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGTCGGCCACTACGTGGGACCTGTGGGGTCT

507 aTCTTtCTTGTGGTCAACTGTtACCTTCTCCCAGGGCCACTGGACGGACGCAAGGTTGCAATTGCTCT
507 GTCTTCCCTTGTGGTCAACTGTtACCTTCTCCCAGGGCCACTGGACGGACGCAAGGTTGCAATTGCTCT
507 GTCTTCCCTTGTGGCCAACGTtACCTTCTCCCAGGGCCACTGGACGGACGCAAGGTTGCAATTGCTCT
865 GTCTTCCCTTGTGGCCAACGTtACCTTCTCCCAGGGCCACTGGACGGACGCAAGGTTGCAATTGCTCT

579 ATCGAATTC
579 ATCGAATTC
579 ATCGAATTC
937 ATCTAtccc

FIG. 85C

10 20 30 40
 GAATTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATAT
 X:
 /SSp CTCTCCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATAT
 550 560 570 580 590 600
 50 60 70 80 A 90 100
 AACAGGTCACCGCATGGCATGGATATGATGATGAACCTGGTCCCTACGACGGCGTTAGT
 :
 AACGGGTCAACCGCATGGCATGGATATGATGATGAACCTGGTCCCTACGACGGCGTTGGT
 610 620 630 640 650 660
 110 120 130 140 150 160
 GGTAGCTCAGCTGCTCCGGATCCCACAAGCCATCTGGACATGATCGCTGGTGCCTACTG
 :
 AATGGCTCAGCTGCTCCGGATCCCACAAGCCATCTGGACATGATCGCTGGTGCCTACTG
 670 680 690 700 710 720
 170 180 190 200 210 220
 GGGAGTCTGGCGGGCATAGCGTATTCTCCATGGTGGGAACTGGCGAAGGTCTTGGC
 :
 GGGAGTCTGGCGGGCATAGCGTATTCTCCATGGTGGGAACTGGCGAAGGTCTTGGT
 730 740 750 760 770 780
 230 240 250 260 270 280
 AGTGCTGCTGCTATTGCCGGCGTCAGCGGAAACCCACGTCACTGGGGGGATGCCGC
 :
 AGTGCTGCTGCTATTGCCGGCGTCAGCGGAAACCCACGTCACTGGGGGGAAAGTGCCGG
 790 800 810 820 830 840
 290 300 310 320 330 340
 CAAAACACTACGGCTAGCCTTACTGGTCTCTCAATTAGGTGCCAACAGAACATCCAGCT
 :
 CCACACTGTGTCTGGATTGTTAGCCTCTCGCACCAAGCGCCAAGCAGAACGTCCAGCT
 850 860 870 880 890 900
 350 360 370 380 390 400
 GATCAACACCAACGGCAGTTGGCACATCAACAGGACGGCCTTGAACGTCAATGATAGCCT
 :
 GATCAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACGTCAATGATAGCCT
 910 920 930 940 950 960
 410 420
 CAACACCGGCTGGAAATTC
 : : : : : : : X
 CAACACCGGCTGGTGGCAGGGCTTTCTATCACCAAGTTCAACTCTTCAGGCTGTCC
 970 980 990 1000 1010 1020

FIG. 86

AA #117-308 (putative envelope region)

FIG. 87

1) HCT #18 (USA)	3 clones sequenced
2) JH23 (USA)	?
3) JH 27 (USA)	?
4) PBL-Th (USA)	2 clones sequenced
5) EC1 (Italy)	3 clones sequenced
6) HCV-1 (chimpanzee)	multiple

C/M←→S

1) (P)
 2)
 3)
 4)
 5)

6) RNLGKVIDLTCGFADLMGYIPLVGAPLGGAARALAHGVRVLEDGVNYATGNL

1)	H			
2)				
3)	S		T	T
4) L				
5) (F)	S			

6) PGCSFSIFLLALLSCLTVVPASAYQVRNSTGLYHVTNDCPNSSIVYEAADAILH

1)	Y (H)	V	V	T	
2) A	D	V	V	K	T
3) S		PVA		N	
4) A			A	R	T
5)	H	V		T	

6) TPGCVPCVREGNASRCWVAMPTVATRDGKLPATQLRRHIDLLVGSATLCS

1)				
2)	I		D	
3)			D	
4)				
5)	I			

6) ALYVGDLCGSVFLVGQLFTSPRRHWTTQGCNCI

SUMMARY: "S" AA117-308 (93%)

HCT#18, PBL-Th, EC1(Italy) have 97% homology with HCV-1

JH23 and JH 27 have 96% and 95% homology with HCV-1,respectively

AA#300-438 (C-terminal region of the putative envelope region and amino ~1/3 of NS1)

- 1) JH23 ?
- 2) JH27 ?
- 3) Japanese isolate (T. Miyamura) ?
- 4) EC10 (Italy) 2 clones sequenced
(one nt difference, which did not result in an amino acid change)
multiple
- 5) HCV-1 (chimpanzee)

S ← → NS1

- 1) D A V
- 2) D A
- 3) V S VM V
- 4)

5) TTQGCNCISIYPG HIT GHR MAW DMM MNWSPTT ALV MAQ LL RIP QAI LDM IAGA

- 1) M R ARSTA VA
- 2) T YT N A R T Q A L T F
- 3) L Y I M G H R V Q V T T L T
- 4) A I A K T A S L T A

5) HWGVLAGIA YFSMVGNWAKVLVLL FAGVDAETHVTGGSAGHTVSGFVSL

- 1) FS R I I T V
- 2) FT D I I R A D
- 3) FR S K I V I R Q F
- 4) FNL I I R N

5) LAPGAKQNVQLINTNGSWHLNSTALNCNDLNTGWL

SUMMARY: NS 1 AA 330-660

"Isolate"	%Homology (AA330-438)	%Homology (AA383-405)
JH23	83	57
JH27	80	39
Japanese	73	48
EC10 (Italy)	84	48

FIG. 88

FIG. 89A

5' terminus-----

CACTCCACCATGAATCACTCCCTGTGAGGAACTACTGTCCTCACGCAGAAAGCGTCTAG
CCATGGCGTTAGTATGAGTGTGCGCAGCCTCCAGGACCCCCCTCCGGGAGAGCCATA
GTGGTCTCGGGAACCGGTGAGTAGACACCGGAATTGCCAGGACGACGGGTCCTTCTTGA
TCAACCCGCTCAATGCCCTGGAGATTGGCGTGCCCCCGAAGACTGCTAGCCGAGTAGT
GTTGGGTCGCAAAGGCCTTGTGGTACTGCCTGATAGGGTGCTTGCAGTGCCTGGGAG-300

(Putative initiator methionine codon)

| G C

GTCTCGTAGACCGTGCACCATGAGCACGAATCCTAACCTCAAAAAAAAACAAACGTAA
CACCAACCGTCGCCAACAGGACGTCAAGTCCCGGGTGGCGGTAGATCGTTGGTGGAGT
TTACTTGTGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGCAGAGAAAGACTTCCGA
GCGGTCGCAACCTCGAGGTAGACGTCAGCCTATCCCCAAGGCTCGTGGCCCGAGGGCAG
GACCTGGGCTCAGCCGGTACCCCTGGCCCCTATGGCAATGAGGGCTGCGGGTGGC-600
GGGATGGCTCTGTCTCCCGTGGCTCTGGCCTAGCTGGGCCCCACAGACCCCCGGCG
TAGGTGCGCACAATTGGGTAAGGTATCGATACCCTACGTGCGGCTCGCCGACCTCAT
GGGGTACATAACGCTCGTGGCGCCCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGG
CGTCCGGGTTCTGGAAGACGGCGTGAACTATGCAACAGGGAACCTCCTGGTTGCTCTT

C G

CTCTATCTTCCCTCTGGCCCTGCTCTTGACTGTGCCGCTTCGGCCTACCAAGT-900
GCGCAACTCCACGGGGCTTACCACTCGTACCAATGATTGCCCTAACCTCGAGTATTGTGA
CGAGGGCGGCCATGCCATCCTGCACACTCCGGGGTGCCTCCCTGGCGTTCTGAGGGCAA
CGCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCC
CGCGACGCGAGCTTCGACGTACATCGATCTGCTTGTGGAGCGCCACCCCTCTGTTGGC
CCTCTACGTGGGGGACCTATGCGGGTCTGTCTTCTTGTGGCCAACGTGTTACCTTCTC-1200
TCCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCATCTATCCGGCCATATAAC

G

GGGTCAACCGCATGGCATGGGATATGATGATGAACCTGGTCCCTACGACGGCGTTGGTAAT
GGCTCAGCTGCCGGATCCCACAAGGCATCTGGACATGATCGCTGGTGCCTACTGGGG
AGTCCTGGCGGGCATAGCTTCTCATGGTGGGGAACTGGGCGAAGGTCTGGTAGT
GCTGCTGCTATTGCGCGTCGACGGAAACCCACGTCACCGGGGGAAAGTGGCCGGCA-1500
CACTGTGCTGGATTGTTAGCCTCCTCGCACCAAGGCGCCAAGCAGAACGTCAGCTGAT
CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACCTGCAATGATAGCCTCAA
CACCGGCTGGTGGCAGGGCTTTCTATCACCACAAGTCAACTCTTCAGGCTGTCCTGA
GAGGCTAGCCAGCTGCCGACCCCTACCGATTGACCAAGGGCTGGGGCCCTATCAGTTA
TGCCAACGGAAAGCGGGCCCGACCAAGCGCCCTACTGCTGGCACTACCCCCAAAACCTTG-1800
CGGTATTGTGCCCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCCAGCCCCGT
GGTGGTGGGAACGACCGACAGGTGGCGCCACCTACAGCTGGGGTAAAATGATAC
GGACGTCTCGTCTTAACAATACCAAGGCCACCGCTGGCAATTGGTTCGGTTGTACCTG
GATGAACTCAACTGGATTCAACCAAGTGTGCGGAGCGCCCTTGTGTATCGGAGGGC
GGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCGGACGCCACATA-2100

C

CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCGACTACCCGTATAG
GCTTGGCATTATCCTTGTACCATCAACTACACCATATTAAAATCAGGATGTACGTGGG
AGGGGTGAAACACAGGCTGGAAAGCTGCGTGCACACTGGACGCGGGCGAACGTTGCGATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCAACTACACAGTGGCAGGT
CCTCCCGTGTCTTACAACCCCTACCAAGCCTTGTCCACCGGGCTCATCCACCTCCACCA-2400
GAACATTGTGGACGTGCACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGGCAT
TAAGTGGGAGTACGTCGTTCTCCCTGTTCTGCTTGTGACGACGCGCGCTGCTCCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGGAGGGCGGTTGGAGAACCTCGTAATACT
TAATGCAGCATCCCTGGCGGGACGCAAGGTCTTGTATCCTTCTCGTGTCTTCTGCTT
TGCATGGTATTGAAGGGTAAGTGGGTGCCCCGGAGCGGGTCTACACCTCTACGGGATGTG-2700
GCCCTCTCCTCGCTCCGTGGCGTTGGCGTGTGCCCCAGCGGGCGTACGCGCTGGACACGGAGGT
GGCGCGTGTGGCGGTGTTCTCGTGGGTTGATGGCGCTGACTCTGTCAACCGATA
TTACAAGCGCTATATCAGCTGGTGTGGCTTGTGGCTTCAAGTATTCTGACCAAGAGTGG
AGCGCAACTGCACGTGTGGATTCCCCCTCAACGTCCGAGGGGGCGCACGCCGTAT

FIG. 89B

CTTACTCATGTGCTGTACACCCACTCTGGTATTTGACATCACCAAATTGCTGCTGGC-3000
CGTCTTCGGACCCCTTGGATTCTTCAAGCCAGTTGCTTAAAGTACCCACTTTGTGCG
CGTCCAAGGCCTCTCGGTTCTGCGCGTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAAATGGTCATCATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCAC
TCCTCTCGGGACTGGGCGACAACGGCTTGCGAGATCTGGCGTGGCTTAGAGCCAGT
CGTCTTCGCCAAATGGAGACCAAGCTCATCACGTGGGGGCAGATACCGCCGCGTGCAGG-3300
TGACATCATCAACGGCTTGCGCTGTTCCGCCGCAGGGGCCGGAGATACTGCTCGGGCC
AGCGATGGAATGGTCATCAAGGGGTGGAGGTTGCTGGGCCCATCACGGCGTACGCCA
GCAGACAAGGGGCCCTAGGGTGATAATCACCAAGCCTAAGGCCGGACAAAAACCA
AGTGGAGGGTGGAGGTCCAGATTGTGTAAGTGTGCCAAACCTCTGGCAACGTGCA
CAATGGGGTGTGCTGGACTGTCTACCACGGGCCGGAACGAGGACCATCGCTACCCAA-3600

T
GGGTCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCC

C
GCAAGGGTAGCCGCTCATTGACACCCCTGCACTTGCAGGGCTCCTCGGACCTTACCTGGTCAC
GAGGCACGCCGATGTCAATTCCGTGCGCCGGCGGGGTGATAGCAGGGGCAGCCTGCTGTC
GCCCGGCCCATTTCTACTTGAAAGGCTCCTCGGGGGTCCGCTGTTGTGCCCGCGGG
GCACGCCGTGGGCATATTAGGGCCGCGGTGTCACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTC
CTCTCACCAGTAGTGCCTCAGGGCTCACCTCATGCTCCCACAGGCAG
CGGCAAAAGCACCAAGGTCCCCTGCAATGCACTGAGCTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTGTGCTGCAACACTGGCTTGGTCTACATGTCCAAGGCTATGGGAT

T
CGATCTAACATCAGGACGGGGTGAGAACAAATTACCAACTGGCAGCCCCATCACGTACTC-4200
CACCTACGGCAAGTTCTGCGACGGCGGGTGTCGGGGGCGTTATGACATAATAAT
TTGTGACGAGTGCCACTCACGGATGCCACATCCATTTGGGCATCGGCACTGTCCTTGA
CCAAGCAGAGACTCGGGGGCGAGACTGGTTGTGTCGCCACGCCACCCCTCGGGCTC
CGTCACTGTGCCCATCCAAACATCGAGGAGGTTGCTCTGTCCACCAACGGAGAGATCCC
TTTTACGGCAAGGCTATCCCCCTGAAAGTAATCAAGGGGGGAGACATCTCATCTCTG-4500
TCATTCAAAGAAGAAGTGCAGACTCGCCGAAAGCTGGTGCATTGGGCATCAATGC
CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCGACCAGCGGCGATGTTGCGT

A
CGTGGCAACCGATGCCCTCATGACCGGGTATACCGGGACTTCGACTCGGTGATAGACTG
CAATACGTGTGTCACCCAGACAGTCGATTTCAAGCCTTACCTTACCCATTGAGAC
AATCACGCTCCCCAGGAATGCTGTCCTCGCACTCAACGTCGGGGCAGGACTGGCAGGGG-4800
GAAGCCAGGCATCTACAGATTGTCAGGAGGTTGCTCTGGTATGAGCTCACGCCGCCGA
GTCCGTCCTCTGTGAGTGTATGACGCAGGCTGTGCTGGTATGAGCTCACGCCGCCGA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGTGTGCCAGGACCA
TCTTGAATTGGAGGGCGTCTTACAGGCCTCACTCATATAGATGCCACTTCTATC
CCAGACAAAGCAGAGTGGGAGAACCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCCTCCCCATCGTGGGACAGATGTGAAAGTGTGTTGATTGCGCT
CAAGCCCACCTCCATGGCCAACACCCCTGCTATACAGACTGGCGCTGTTAGAATGA
AATCACCTGACGCACCCAGTCACCAAATACATGACATGCTGCGGCCACCTGGA
GGTCGTACAGAGCACCTGGGTGCTCGTGGCGCGTCTGGCTGCTTGGCCCGTATTG
CCTGTCAACAGGCTGCGTGGTCATAGTGGGAGGGCTGTCTGTCGGGAAGCCGGCAAT-5400
CATACCTGACAGGGAAAGTCTTACCGAGAGGTTGATGAGATGAAAGAGTGTCTCAGCA
CTTACCGTACATCGAGCAAGGGATGATGCTGCCAGAGCAGTTCAAGCAGAAGGCCCTCGG
CTCCTGCAAGACCGCGTCCCGTCAAGGAGGTTATGCCCTGCTGTCCAGACCAACTG
GCAAAAACCTGAGACCTCTGGCGAAGCATATGTGAAACTTACAGTGGGATAACAATA
CTTGGGGGCTTGTCAACGCTGCCCTGGTAACCCGCCATTGCTTCAACATATTGGGGGG
AGCTGCTGTACAGCCACTAACCAACTAGCCAACCCCTCTTCAACATATTGGGGGG
GTGGGGTGGCTGCCAGCTGCCGCCGGTGGCGCTACTGCCCTTGTGGCGCTGGCTT
AGCTGGCGCCGCACTGGCAGTGTGGACTGGGAAGGTCCTCATAGACATCCTTGCAGG
GTATGGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGGTGAGGTCCC
CTCCACGGAGGACCTGGTCAAATCTACTGCCGCCATCCTCTGCCCGGAGGCCCTCGTAGT-6000
CGGCGTGGCTGTGCAAGCAAACTGCGCCGGCACGTTGGGCCGGCGAGGGGGCAGTGCA
GTGGATGAACCGGGCTGATAGCCTTGCCTCCGGGGAAACATGTTCCCCCACGCACTA
CGTGCCTGGAGAGCGATGCACTGCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCTGAGGGCACTGCACCAAGTGGATAAGCTGGAGTGTACCAACTCCATGCTCCGG

FIG. 89C

TTCCCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGTTGAGCGACTTTAACACCTG-6300
 GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGATCCCCTTGTGTCCTGCCAGCGCG
 GTATAAGGGGGCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
 GATCACTGGACATGTAAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAA
 CATGTGGAGTGGGACCTCCCCATTAAATGCCATACACCAACGGGCCCCGTACCCCCCTCC
 TCGCCGAACTAACGTTCGCCTATGGAGGGTGTGAGAGGAATATGTGGAGATAAG-6600
 GCAGGGGGGGACTTCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTG
 CCAGGTCCTCATGCCCGAATTTCACAGAATTGGACGGGTGCGCTACATAGGTTGC
 GCCCCCTTGCAAGGCCCTGCTGCCGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
 CCCGGTAGGGTCGAATTACCTTGCGAGGCCGAACCGGACGTGCGCTGTTGACGTCAT
 GCTCACTGATCCCCTCCCATAAACAGCAGAGGGCGGGCGAAGGGTGGCGAGGGGATC-6900
 ACCCCCCCTGTGGCCAGCTCTCGGCTAGGCCACTCCGCTCATCTCTCAAGGCAAC
 TTGACCGCTAACCATGACTCCCCGTATGCTGAGCTCATAGAGGCCAACCTCTATGGAG
 GCAGGGAGATGGGGCGCAACATCACCAAGGGTTGAGTCAGAAACAAAGTGGTGATTCTGGA
 CCTCTTCGATCCGCTGTGGCGAGGAGGACAGCAGGGAGATCTCGTACCCGAGAAAT
 CCTGCAGGAAGTCTGGAGATTGCCAGGCCCTGCCGTTGGCGCGGGACTATAA-7200
 CCCCCCGCTAGTGGAGACGTGGAAAAAGGCCGACTACGAACACCTGTGGTCCATGGCTG
 TCCGCTCCACCTCCAAGTCCCCTCCTGTGCCTCCGCCCTCGGAAGAAGCGGACGGTGGT
 CCTCACTGAATCAAACCTATCTACTGCCCTGGCCGAGCTGCCACAGAACGCTTGGCAG
 CTCCCTCAACTTCCGGCATTACGGCGACAATACGACAAACATCCTCTGAGGCCGCCCTC
 TGGCTGCCCTGGACTCGACGCTGAGTCCTATTCCATGCCCTGGAGGGGA-7500
 GCCTGGGGATCCGGATCTTAGCGACGGGTATGGTCAACGGTCAGTAGTGAGGCCAACGC
 GGAGGATGTGTTGCTCAATGTCTACTCTGGACAGGCGACTCGTCACCCCGTG
 CGCCGCGGAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGTGTACGTACCA
 CAATTGGTGTATTCCACACCTCACGAGTGCTTGCACAGGAGAACAGAACAGTACATT
 TGACAGACTGCAAGTCTGGACAGCCATTACAGGAGCTACTCAAGGGTTAACAGCAGC-7800
 GGCCTAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCGAGCTGACGCC
 AACACTCAGCCAATCCAAGTTGGTATGGGCAAAAGACGTCGTTGCCATGCCAGAAA
 GGCGTAACCCACATCAACTCCGTGTTGAAAGACCTCTGGAAAGACAATGTAACACCA
 AGACACTACCATCATGGCTAAGAACGAGGTTTCTGCGTTAGCCTGAGAACGGGGTC
 TAAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCGTGCCTGTCAGAACAGATGGC-8100
 TTTGTACGACGTGGTTACAAAGCTCCCTTGGCGTGTGTTGGAAAGCTCCTACGGATTCA
 ATACTCACCAGGACAGCAGGGTTGAATTCTCGTGCACGCTGAAAGTCCAAGAAA
 AATGGGTTCTGTATGATACCGCTGCTTGACTCCACAGTCAGGAGACATCCG
 TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAACGCCGCTGGCCATCAA
 GTCCCTCACCGAGGAGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACTG-8400
 CGGCTATCGCAGGTGCCCGCGAGCGCGTACTGACAACTAGCTGTTAACACCCCTCAC
 TTGCTACATCAAGGCCGGCAGCTGCGAGCCGAGGGCTCAGGACTGCACCATGCT
 CGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGTCCAGGAGGACGCC
 GAGCCTGAGAGCCTTCACGGAGGCTATGACCAAGGTACTCCGCCCTGGGACCCCC
 ACAACCAGAACATGACTGGAGCTCATAACATCATGCTCCTAACGTGTCAGTCGCCA-8700
 CGACGGCGCTGGAAAGAGGGTCTACTACCTCACCGTGACCCACAAACCCCCCTGCCAG
 AGCTCGTGGAGACAGCAAGACACACTCCAGTCACATTCTGGCTAGGCAACATAATCAT
 GTTTGCCTTACACTGTGGCGAGGATGATACTGATGACCCATTCTTAGCGTCTTAT
 AGCCAGGGACCAAGCTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCC
 AGAACCAACTGGATCTACCTCCAATATTCAAAGACTCCATGGCCTCAGGCCATTTC
 CCACAGTTACTCTCCAGGTGAAATTAAAGGGTGGCCGATGCCCTCAGAAAACCTGGGGT

G

ACCGCCCTGGCAGCTTGGAGACACCGGGCCGGAGCGTCCGCCCTAGGCTTCTGGCCAG
 AGGAGGCAGGGCTGCCATATGTCGCAAGTACCTCTCAACTGGCAGTAAGAACAAAGCT
 CAAACTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTGTCCGGCTGGTTCACGGCTGG
 CTACAGGGGGAGACATTATCACAGCGTGTCTCATGCCCGGGCCGCTGGATCTGGTT-9300
 TTGCCTACTCCTGCTGCAAGGGTAGGCATCTACCTCTCCCCAACCGATGAAGGTT
 GGGTAAACACTCCGGCCT-----3' terminus

Some clonal heterogeneities producing amino acid
 substitutions are shown. There are many other
 "silent mutations (not shown).

FIG. 90A

R T
MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTSERSQPRGRQQPIPCKARRPEGRTWAQPGYPWPPLYNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGKVIDTLTCGFADLMGYIPLVGAPLGBAARA

T
LAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVCREGNASRCWVAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVGDLCGSVFLVGQLFTSPRRHWT-300

V
TQGCNCISYPGHIITGHRMAWDMMMNWSPTTALVMAQLLRIPQAILEDIA
AHWGVLAGIAYSMVGNWAKVLVVLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLAGLFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCGPVYCFTPSPVVVGTTDRSGAPTYSWGENDTDVFVLNTRPPLGNWF
GCTWMNSTGFTKVCGAPPVCIGGAGNNTLHCPTDCFRKHDPDATYSRCGSG-600

I
PWLTPrCLVDYPYRLWHYPCTINYTIKFIRMYVGGVEHRLEAACNWTRGE
RCDLEDRDRSELSPLLLTTQWQVLPCSFTTLPALSTGLIHLHQNIVDQ-700
YLYVGVGSSIASWAIKWEYVVLFLLLADARVCSCLWMMLLISQAAALEN
LVILNAASLAGTHGLVSFLVFFCFAWYLKGKWPAGAVTFYGMWPLLLL-800

(N)
LALPQRAYALDTEVAASC GG VVLVGLMALTLSPYYKRYISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRDAVILLCAVHPTLVFDITKLLAVFGPLW-900
ILQASLLKVPYFVRVQGLLRFCALARKMIGGHYVQMVIIKLGALTGTYVY
NHLTPLRDWAHNGLRDLAVAVEPVVFQS METKLTWGADTAACGDIINGL-1000
PVSARRGREILLGPADGMVSKGWRL LAPITAYAQQT RGLLGCIIITSLTGR
DKNQVEGEVQIVSTAATQFLATCINGVCWTVYHGAGTRTIASPKGPVIQM-1100

S T
YTNVQDQLVGWPAPQGSRSLTPTCTCGSSDLYLVTRHADVIPVRRRGDSRG
SLLSPRPISYLGKSSGGPLLC PAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTGSGKSTKVPAAQGYK

L
VLVLNPSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYGKFL-1300
ADGGCSGGAYDIIICDECHSTDATSI LGIGTVLDQAE TAGARL VV LATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGGRHLIFCHSKK C-1400
DELAALKVALGINAVAYYRG LDVSVIPTSGDVVVVATDALMTGYTGDFDS

Y (S)
VIDCNTCVTQTVDFSLDPFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNTPGLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTKQSGENLPYLVAYQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLLRLGAVQNEITLTHPVTKYIMTCMS
ADLEVVTSTWVLVGGVLAALAAYCLSTGCVVIVGRVVLSGKPAIIPDREV-1700
LYREFDEMEECSQHL PYIEQGMM LAE QFKQKA LG LQTA SRQAEVIA PAV
QTNWQKLET FWAKHMWNFISGIQYLAGLSTLPGNP AIASLMAFTAATVSP-1800
LTTSQTLLFNILGGW VAAQLAAPGAATAFVGAGLAGAAIGSVGLGKV LID

FIG. 90B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVCAA-1900

(HC)
ILRRHVGPGEGAVQWMNRIFAFAASRGNHVSPTHYVPESDAARVTAILSS
LTVTQLLRRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTWLKAKLM-2000

(V)
PQLPGIPPFVSCQRGYKGWVWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTTFPINAYTTGPCTPLPAPNYTFALWRVSAEEYVEIRQVGDFH-2100
YVTGMTTDNLKCPQCQVPSPEFFTTELGDGVRLHRFAPPCKPLLREEVSFRVG
LHEYPGSQLPCEPEPDVAVLTSMLTDPSHITAEEAGRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSPDAELIEANLLWRQEMGGNI TRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVWARPDYNPPLVET-2300

(S)
WKKPDYEPPVVGCPPLPKSPPVPPRKRTVVLTESTLSTALAELATR

(FA)
SFGSSSTSGITGDNTTSSEPAAPSGCPPDSDAESYSSMPPLEGEPEGDPDL-2400
SDGSWSTVSSEANAEDVVCCSMSYSWTGALVTPCAEEQKLPINALSNSL
LRHHNLVYSTTSRSACQRQKKVTFDRLQVLDHYQDVLKEVKAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSFKGYGAKDVRCHARAKAVTHINSVWKDLLEDN
VTPIDTTIMAKNEVFCVQPEKGGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAIYQCCDLDpqARVAIKSLTERLYVGGPLTNSRGENCGYRRCR-2700
ASGVLTTSCGNTLTCYIKARAACRAAGLQDCTMLVCGDDLVVICESAGVQ
EDAASLRAFTEAMTRYSAPPGDPPQPEYDLELITSRSSNVSAHDGAGKR-2800
VYLYTRDPTTPLARAAWETARHTFVNWLGNIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPPIQRLHGLSAFSLHSYSPG-2900

G
EINRVAACLRKLGVPLRAWRHRARSVRARLLARGGRAAICGKYLFNWAV

(P)
RTKLKLTPIAAGQLDLSGWFTAGYSGGDIYHSVSHARPRWIWFCLLLA-3000
AGVGIYLLPNR0-3011

Stop codon

() = Heterogeneity due possibly
to 5' or 3' terminal cloning
artefact.

FIG. 91

